ANNUAL REPORT
1958

CALIFORNIA ACADEMY OF SCIENCES

Cover photograph by Ansel Adams.

CALIFORNIA ACADEMY OF SCIENCES

Annual Report

for the Year Ending June 30, 1958

With a Condensed Report for the Years Since 1949

Robert C. Miller
Director

CALIFORNIA ACADEMY
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* Elected October 1, 1958.

CALIFORNIA ACADEMY OF SCIENCES

GOLDEN GATE PARK : SAN FRANCISCO 18

December, 1958

TO THE MEMBERS AND FRIENDS
CALIFORNIA ACADEMY OF SCIENCES:

The California Academy of Sciences has been serving the people of San Francisco, California, and the nation as an educational and scientific institution or more than 105 years. Over this period, the fame of this non-profit organization has become world-wide. Its contributions are many and extensive.

In the report presented herewith by the Academy's Director, Dr. Robert C. Miller, some of the more important recent scientific and educational developments are briefly referred to.

With the passing of time the scope of the Academy's operations has broadened and its significance has become more widely recognized. These have brought on both policy and financial problems. In 1957, your Board of Trustees appointed a special committee to review the Academy's program and to study its financial requirements as needed to achieve its educational and scientific goals. This committee consisted of: Francis P. Farquhar, Chairman; Mrs. Joseph C. Fennelly; J. W. Mailliard III; Dr. Tracy I. Storer, and Brayton Wilbur.

Its report, submitted in the spring of 1958, pointed out clearly that for the Academy to continue to promote science, conduct original research, gather and maintain collections, make them available to students and the public generally for educational purposes and to disseminate materials pertaining to science and education, additional funds were required. These were needed immediately to permit a reasonable increase in the totally inadequate salaries of the scientific staff; to provide, with the spiraling of costs, for the continued operations of the Academy and over the years for larger and more adequate facilities to house and display the Academy's outstanding collections and exhibits.

As of the date of this report, the problems presented were being carefully considered and I am glad to state that plans have been made and programs initiated designed to solve them. The real solution, however, depends upon the people of San Francisco, California, and the nation who, over the years, have come, and in the future will come, more and more to appreciate the Academy's work and its outstanding contribution in the fields of science and education.

While the Academy has many friends who are constantly making financial and other contributions to help defray its various expenses, there are a number of projects which, for lack of financial support, have had to go begging, or have had to be indefinitely postponed. They are too numerous to list here, but they vary in value from that of a few dollars to those which would cost thousands, and in some cases, millions of dollars.

We welcome inquiries from members of the Academy and our friends concerning whatever detailed phases of the Academy's operations an individual or an organization may be interested in.

In conclusion, let me urge all members of the Academy to use its facilities extensively. Only by becoming thoroughly familiar with its many facets can anyone really appreciate the outstanding work that the staff is constantly performing. We are indeed indebted to them. Not only we, but all Americans benefit from their scientific and educational accomplishments.

Respectfully submitted,

Decker G. McAllister,
Chairman, Board of Trustees

REPORT FOR THE YEAR ENDING JUNE 30, 1958

With a Condensed Report for the Years Since 1949

For several years it has been the practice to distribute the reports of the activities of the Academy's various departments in mimeographed form at the time of the Annual Meeting. No printed report has been issued since that for the year 1949. While the mimeographed documents have served a useful purpose, and have in fact been more voluminous and detailed than is usually feasible in a printed report, experience has proved that they are not a satisfactory substitute. Mimeographed material is not easily read, is not illustrated, and further has a tendency to get lost instead of being preserved by the recipient as a permanent record.

This report is nominally for the fiscal year ending June 30, 1958; but since no definitive printed reports have been or will be issued for the individual years since 1949, it seems desirable to summarize here for permanent record the major events of the intervening period. Inasmuch as 1949 is taken as a baseline for purposes of comparison, this is in fact the report of a decade.

Such a report has certain definite advantages. It eliminates the routine, and highlights the unusual. Trends which may be ill-defined or not even perceptible in a single year become impressive over a period of time. The progress or decline of an institution can best be surveyed down a vista of years.

Membership

Membership in the Academy, which stood at 1,551 in 1949, has increased to 1,982 as of June 30, 1958. The numbers in each of the categories of membership are shown in the following tabulation:

Regular Members	1,165
Family Members	162
Life Members	220
Fellows	201
Contributing Members	26
Annual Sponsors	24
Honorary Members	23
Patrons	69
Benefactors	2
Associate Members	19
Student Members	71
	1,982

An increase of 431 members of all classes in ten years is not phenomenal growth, although it is nearly 28 per cent greater. While growth of the Academy's membership has never been exceedingly rapid, persons elected seem to prize their membership and show a marked tendency to become permanent friends and supporters of the Academy. Two hundred and thirty persons have been members more than twenty years, one hundred and twenty-seven more than thirty years, and two more than fifty-five years. These last stalwarts certainly deserve to be mentioned by name, Dr. Ralph Arnold of Santa Barbara, who became a member of the Academy in 1900, and Dr. Alfred L. Kroeber of the University of California at Berkeley, who became a member in 1901.

Attendance

Attendance at its public exhibit halls affords an index to the Academy's success in its mission of public education in the sciences. Attendance is not the only criterion; that is to say, a circus or a fire might attract a large attendance without having any important educational value. But certainly attendance is basic. If people do not visit the exhibits they cannot be educated by them.

Our attendance statistics show that an impressive number of people render themselves available for museum education; and it is a reasonable assumption that if they are interested enough to come, they are in a good frame of mind to profit from the experience.

Attendance for the year ending June 30, 1958, was as follows:

North American Hall	482,357
Hall of Science	696,851
Steinhart Aquarium	1,140,886
Total	2,320,094

Compared with a total attendance of 2,039,686, in 1949, this represents an increase of 9 per cent. Considerably more significant than this modest increase in over-all attendance is the increase in attendance of special groups, chiefly school and college classes under the guidance of their teachers. Details are shown in the following tabulation:

	1949		*1958*	
	Groups	*Persons*	*Groups*	*Persons*
Museum	888	33,836	1,408	49,251
Aquarium	582	21,868	1,108	43,886
Total	1,470	55,704	2,516	93,137

This increase of 67 per cent in the number of students coming to the Museum and Aquarium in connection with their class work emphasizes better than anything else the extent to which the Academy is fulfilling its function as an educational institution.

The number of school classes coming specifically to visit the Alexander F. Morrison Planetarium will be discussed in a later section of this report.

Building Program

Ten years ago the Academy was badly crowded both as to exhibit space and as to space for research and for storage of collections. The exhibit halls were full, and much valuable exhibit material was in storage. Of the research departments, only Entomology and Ichthyology, which had quarters in the relatively new Simson African Hall, had room for expansion, or even sufficient for immediate needs.

This situation was partially remedied by construction of the new $1,000,000 Hall of Science begun in 1949 and opened to the public early in 1951. This project started with a bequest to the Academy by the late May Treat Morrison of $150,000 for the construction of an auditorium. To this, Edward Hohfeld, as trustee of the May T. Morrison Trust Estate, offered a grant of an additional $200,000 if the Academy would build a planetarium to be named in honor of Alexander F. Morrison, Mrs. Morrison's husband who had pre-deceased her. The Academy's Board of Trus-

tees, under the chairmanship of the late John Ward Mailliard, Jr., accepted this proposal and set about to raise the necessary additional funds.

It proved feasible to combine into one large project several projects previously contemplated. In addition to the Morrison funds, there were substantial funds available from the Leslie Simson bequest, the James Moffitt Memorial Fund, and the estate of Mrs. Lovell White, which had been left in trust for a memorial to her husband, a prominent California banker of an earlier day. Additional funds of some $300,000 were raised by private subscription. Special mention should be made of memorial contributions, by C. M. Goethe in memory of his wife, the late Mary Glide Goethe, and by Mrs. John M. Augsbury in memory of her husband. Grants for special phases of the project were made by the Rosenberg Foundation, the Irwin Memorial Foundation and the Columbia Foundation. Last but not least should be mentioned $10,000 contributed in small amounts by school children of San Francisco and the Bay Area. Seldom has any undertaking had such a broad basis of community support.

The Hall of Science contains the Alexander F. Morrison Planetarium, the Hall of Astronomy, the May T. Morrison Auditorium, the Lovell White Hall of Man and Nature, a large addition to the Simson African Hall, new shops for the Department of Exhibits and the Planetarium, and new quarters for the Department of Birds and Mammals, including offices, laboratory and storage space, the James

Completed in 1952, the Hall of Science contains the Alexander F. Morrison Planetarium, the Hall of Astronomy, the Lovell White Hall of Man and Nature, and a considerable addition to the Simson African Hall, as well as laboratories for the Departments of Birds and Mammals, Herpetology, and Exhibits.

Moffitt Library of literature on birds and mammals, and the John Augsbury room with its outstanding collection of North American game heads. The building has increased the Academy's floor space sixty per cent.

Library and Hall of Botany

At the time plans were drawn for the Hall of Science, it was hoped to include a Hall of Botany and a new Library wing in the project. There was available a small fund—the Alice Eastwood Herbarium Fund—contributed over the years by friends and admirers of the late Alice Eastwood, the Academy's distinguished Curator of Botany. No funds at all were available for a Library. Mr. Mailliard worked diligently to secure funds for both these purposes. The Eastwood Fund was built up to $70,000, but this was not quite enough. Approaches were made to various foundations on behalf of both the Hall of Botany and the Library, but without success, and —to Mr. Mailliard's great disappointment—these had to be deleted from the plans.

Following Mr. Mailliard's untimely death in 1954, it was discovered that he had himself set up a trust fund for the purpose of building a new Academy Library; a considerable sum was added to this by gifts made to the Academy in memory of Mr. Mailliard.

In the meantime Mrs. Norman B. Livermore and her five sons—George, John, Norman, Jr., Putnam, and Robert—had made a large contribution to the Academy in memory of the late Norman B. Livermore, a member of the Academy from 1913 till his death in 1953, a Trustee for 24 years, and Chairman of the Board from 1938 to 1946. They suggested that this fund be applied to the Hall of Botany.

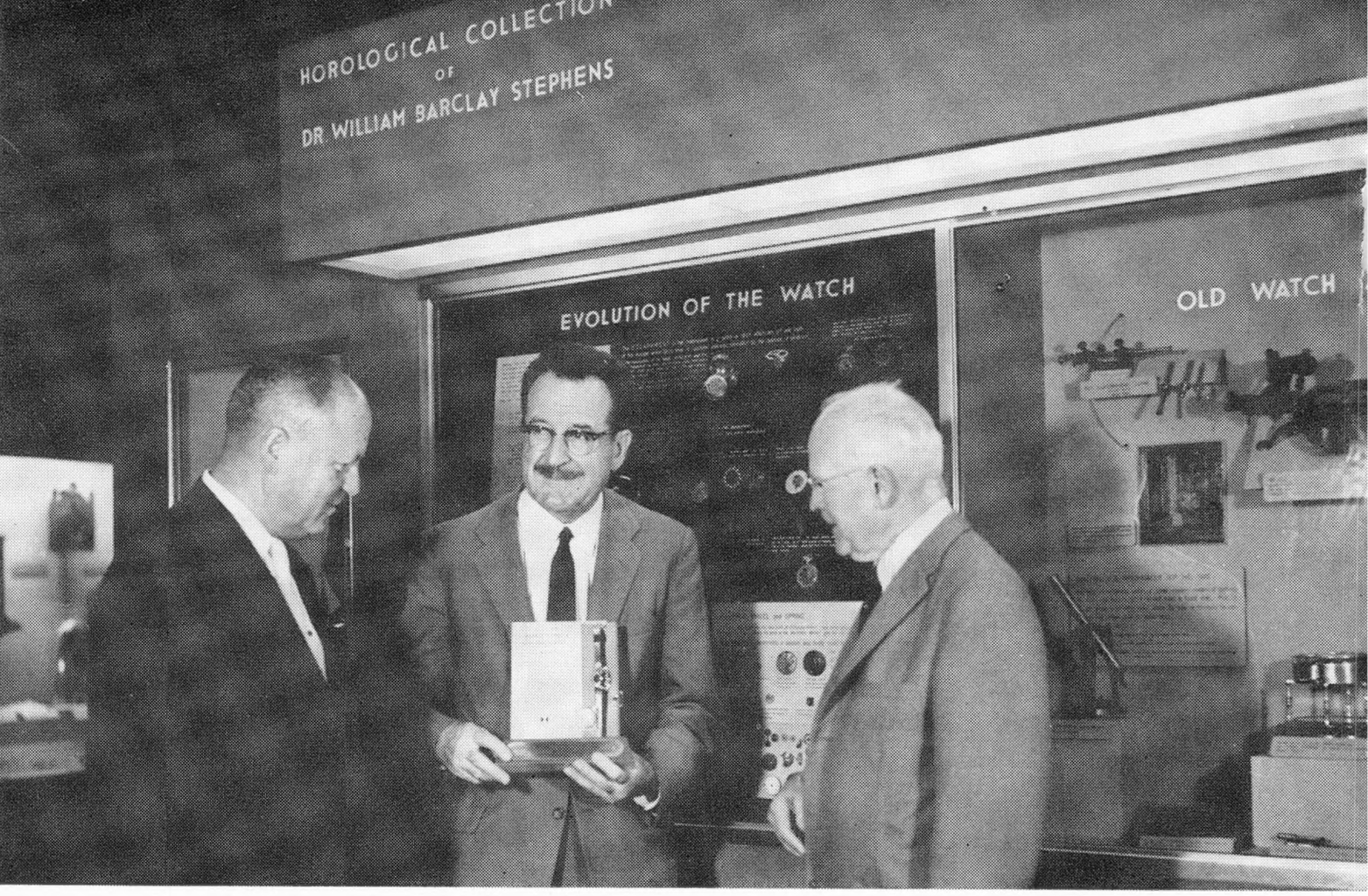
Now it has become possible to proceed with both these projects; and before the close of the next fiscal year we expect to have completed and ready for occupancy the John Ward Mailliard, Jr., Memorial Library and the Alice Eastwood Hall of Botany and Herbarium. The Hall of Botany will contain a commodious, well-appointed room for meetings of the Botany Club and other special gatherings—to be designated the Norman B. Livermore Room.

The new wing will add 25,000 square feet of floor space, providing expansion for the Academy's important and rapidly growing Library and for the Department of Botany. With its completion the Academy will have the most effective, well-integrated physical plant in the 105 years of its history, and the structure will provide a fitting memorial to three people importantly identified with the Academy—Alice Eastwood, Norman B. Livermore, and John Ward Mailliard, Jr.

Exhibits

With the completion of the Hall of Science, the Department of Exhibits, previously crowded into two small rooms at the back of the Simson African Hall, moved into enlarged quarters on the ground floor of the new building. The increased room and improved facilities were very much needed for the big job ahead—installing exhibits in three large new public halls and four smaller ones.

In addition to a large number of temporary exhibits, which have been changed at frequent intervals to provide a continuing source of public interest, and instruction, quite a few permanent exhibits have been installed—Dr. William Barclay Stephens' distinguished collection of clocks, watches and other time-keeping devices through history; the exhibit of "Lamps Through the Ages," sponsored by the Pacific Gas and Electric Company and featuring the absolutely unique Maude Rex Allen



(Above) *The Horological Collection of Dr. William Barclay Stephens (right) is one of the exhibits in the Hall of Science. Here Dr. Stephens and Academy Director Dr. Robert C. Miller accept a pilot-lot movement of the world's finest electric watch from A. A. Colvin, of the Hamilton Watch Company.*

(Left) *The geology of the San Francisco Bay area is depicted in this permanent exhibit sponsored by Standard Oil Company of California.*

(RIGHT) *An absolutely unique exhibit in the Hall of Science is the lamp collection of Maude Rex Allen in this permanent display sponsored by the Pacific Gas and Electric Company.*

(BELOW) *A habitat group of African Birds is inspected by Dr. Robert T. Orr, Curator of Birds and Mammals, and his assistant, Betty North. Dean Witter donated the birds to the Academy.*

The Museum of Photography, sponsored by the San Francisco Examiner, *occupies one end of Lovell White Hall, part of the Hall of Science.*

collection of lamps from all parts of the world; an exhibit of "The History of Photography" sponsored by the San Francisco *Examiner*; an exhibit illustrating the geology of the San Francisco Bay Region sponsored by the Standard Oil Company of California; the Foucault Pendulum, sponsored by an anonymous donor; and the exhibit called "Reasons for the Seasons," made possible through the generosity of Academy member Paul I. Fagan.

Four large dioramas of African mammals were installed in the addition to the Simson African Hall, and two smaller exhibits, one featuring unusual animals of Africa, such as the scaly ant-eater and the wart-hog, the other featuring African ethnology. The new dioramas are spectacularly convincing. They are unsurpassed anywhere for the combination of realism and beauty. Two of the backgrounds were

Temporarily, this is a hippo without a home. It was completed in 1958, but will not be permanently installed until 1959. Dean Witter donated the bones and hide.

painted by the late Belmore Brown, and one each by Ray Strong and Toshio Asaeda. All of the animals were mounted by Cecil Tose, who directed the installation.

In 1957 work was completed on the African Bird Alcove, sponsored by Academy Trustee Dean Witter.

Mr. Witter, as a further product of his African safari of 1948, also donated a hippopotamus, which was mounted and placed on exhibit for the Academy's annual meeting of 1958, and a rhinoceros which is still in process of preparation.

Special mention should be made of the Vonsen Mineral Collection. Magnus Vonsen of Petaluma was a businessman who made a serious hobby of collecting minerals. He accumulated one of the finest mineral collections in western North America, and came to be known and respected as a real authority on mineralogy. He bequeathed his collection to the Academy together with an endowment fund; and before his death in 1954 he had helped select a number of pieces for exhibit. On receiving the entire collection the Department of Exhibits drew plans and recently began installing the collection in a corridor of the North American Hall. The installation is now practically completed, and the Vonsen Mineral Collection—with the William B. Pitts Collection of Gem Minerals immediately adjacent—gives the Academy a Hall of Minerals scarcely to be excelled.

Two other accomplishments of the Department of Exhibits should not pass unnoticed. The Academy was requested by the City and County of San Francisco to prepare the San Francisco exhibit at the 1956 State Fair at Sacramento. The exhibit, featuring the activities of the Academy and the way in which its work contributes to the progress of California, provided something new in state fair exhibits. It received an honorable mention, and the Academy was given a vote of thanks by the San Francisco Supervisors.

Last but not least, the handiwork of our Department of Exhibits was shown at the World's Fair in Belgium, in the form of an exhibit entitled "Photosynthesis Outside the Living Cell," which was constructed for the Department of Plant Nutrition of the University of California.

Bond Issue for Steinhart Aquarium

While new buildings are going up and new facilities being created, it is important to remember that existing facilities must be maintained. The Steinhart Aquarium, once described by a leading authority as "the best Aquarium in the world today," has lately been suffering from diseases of age. It was built in 1923. Thirty-five years is young for a man, old for a horse, and for an aquarium we may charitably say "elderly." The corroding effects of salt water have so affected the three and a half miles of pipe-lines, the 876 valves, the 17 pumps, the tremendous amount of other mechanical and electrical equipment, and the very structure of the Aquarium tanks themselves, as to have for several years presented a constant problem of emergency maintenance—such as stringing garden hose to carry water to fish tanks in lieu of non-functioning or non-existent pipe-lines. It has frequently been a matter of touch-and-go as to whether the Aquarium could be kept open to the public.

When the city, by a vote of the people in 1917, accepted the Steinhart Aquarium it assumed responsibility not only for paying the operating expenses, but also for

maintaining the facilities. Thus the bond issue in the amount of $1,575,000 for a complete rehabilitation of the Aquarium which was put on the June, 1958, ballot was appropriate and in accordance with the original agreement of the people of San Francisco.

The San Francisco Aquarium Society and numerous other civic organizations gave unstinted support; McCann-Erickson, Inc., provided advertising services at no cost to the Academy; and the Aquarium Bond Issue passed by a vote of 141,728 for to 56,068 against.

Careful planning is now under way to restore the Steinhart Aquarium to its former pre-eminence, and even to increase its potential for public education and for scientific research.

A favorite display with all ages is the bank of tropical fish tanks installed some months ago in Steinhart Aquarium. The fish are displayed under conditions which can be easily duplicated for home aquariums.

The Alexander F. Morrison Planetarium

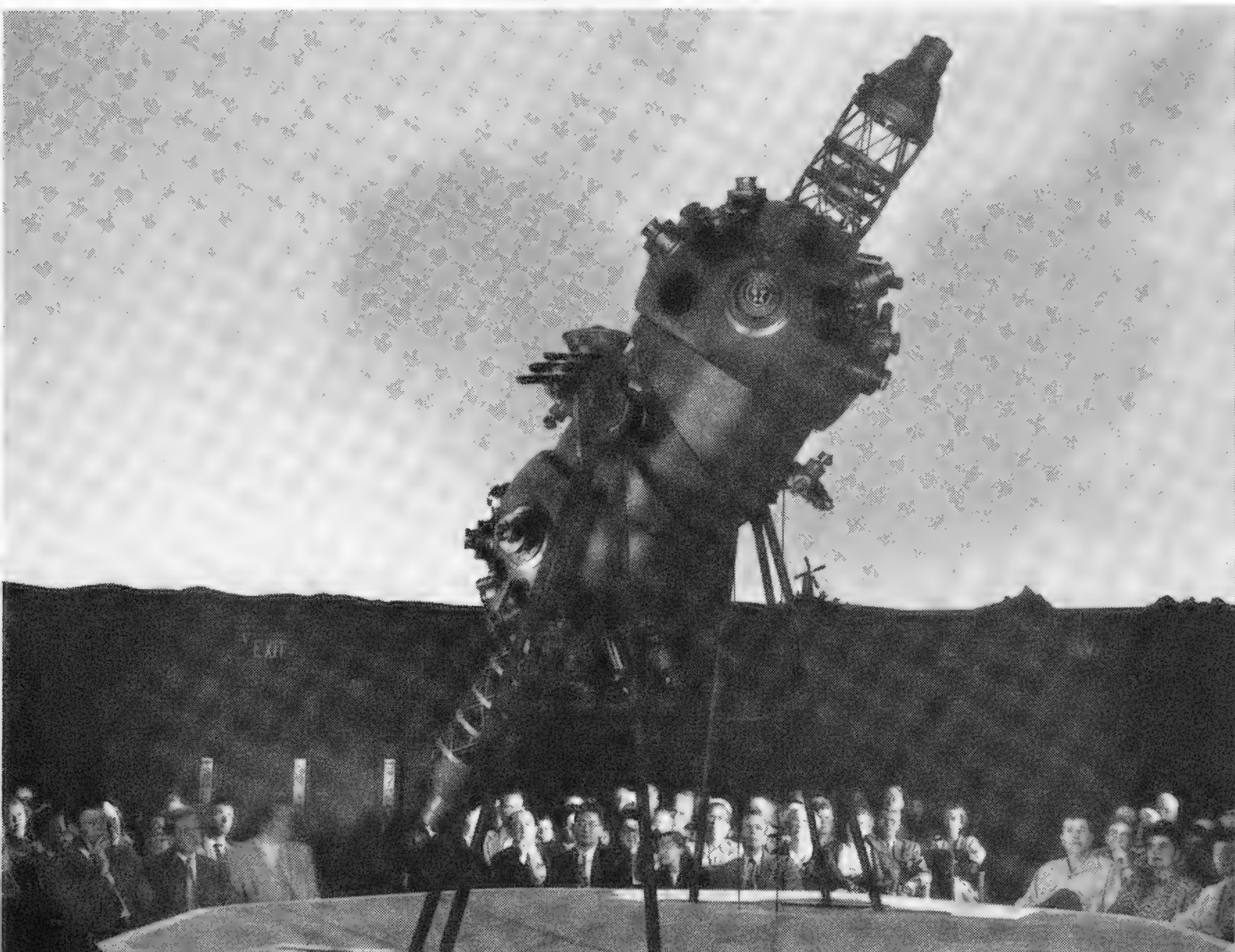
Reference has already been made to the building of the Alexander F. Morrison Planetarium. Even after the funds were available, serious difficulties remained. The Zeiss Planetarium was invented and developed by the German optical firm of Carl Zeiss in Jena. Every major planetarium previously constructed anywhere in the world was equipped with a Zeiss instrument. But Jena and the Zeiss Works had fallen into Russian hands. A number of Zeiss technicians had escaped into Western Germany, and a Zeiss optical plant was subsequently established there. But at the time the Academy needed a star-projector, there was no probability of being able to obtain a Zeiss Planetarium in the foreseeable future. The Trustees had either to find an alternative method of obtaining a star-projector, or give up the idea of a planetarium.

At this critical juncture, members of the Academy's staff suggested that the Academy build its own star-projector. The Academy had a well-equipped instrument shop, manned by skilled technicians, accustomed to servicing microscopes and to making special scientific equipment as needed. This shop had been considerably augmented during World War II, during which it handled large contracts with the armed forces, and was awarded the Navy "E" for excellence of performance.

At the time the proposal that the Academy build its own star-projector was put forward, there was probably nobody in the world who thought it could do the job except the Academy's staff. Various authorities who were consulted considered the idea preposterous. The Trustees, vested with the responsibility of properly administering a large sum of money, were naturally cautious. In this dilemma, they called in Dr. Russell Porter, one of the designers of the 200-inch telescope at Palomar Mountain. Dr. Porter spent two weeks at the Academy, evaluating its instrument shop, talking to personnel and getting their ideas and plans. At the end of this period, he reported to the Trustees that the Academy's instrument shop could build a star-projector as good as the Zeiss—"and," he added, "quite possibly better."

Thus reassured, the Trustees instructed the Academy's instrument shop to go ahead with the building of the star-projector. Almost every one of the 25,000 parts

The first projector for a major planetarium to be built in America dominates the Morrison Planetarium theater. The projector was constructed in the Academy's own instrument shop.



that went into the projector were made at the Academy. The largest castings, requiring a lathe with a forty-inch swing, were machined by the Bethlehem Pacific Shipbuilding Division of Bethlehem Steel. Bethlehem Pacific went all out on this job. The machine work was beautiful and up to the Academy's most exacting standards. Thanks are due also to Bethlehem Pacific's engineering staff for designing the mounting of the star-projector.

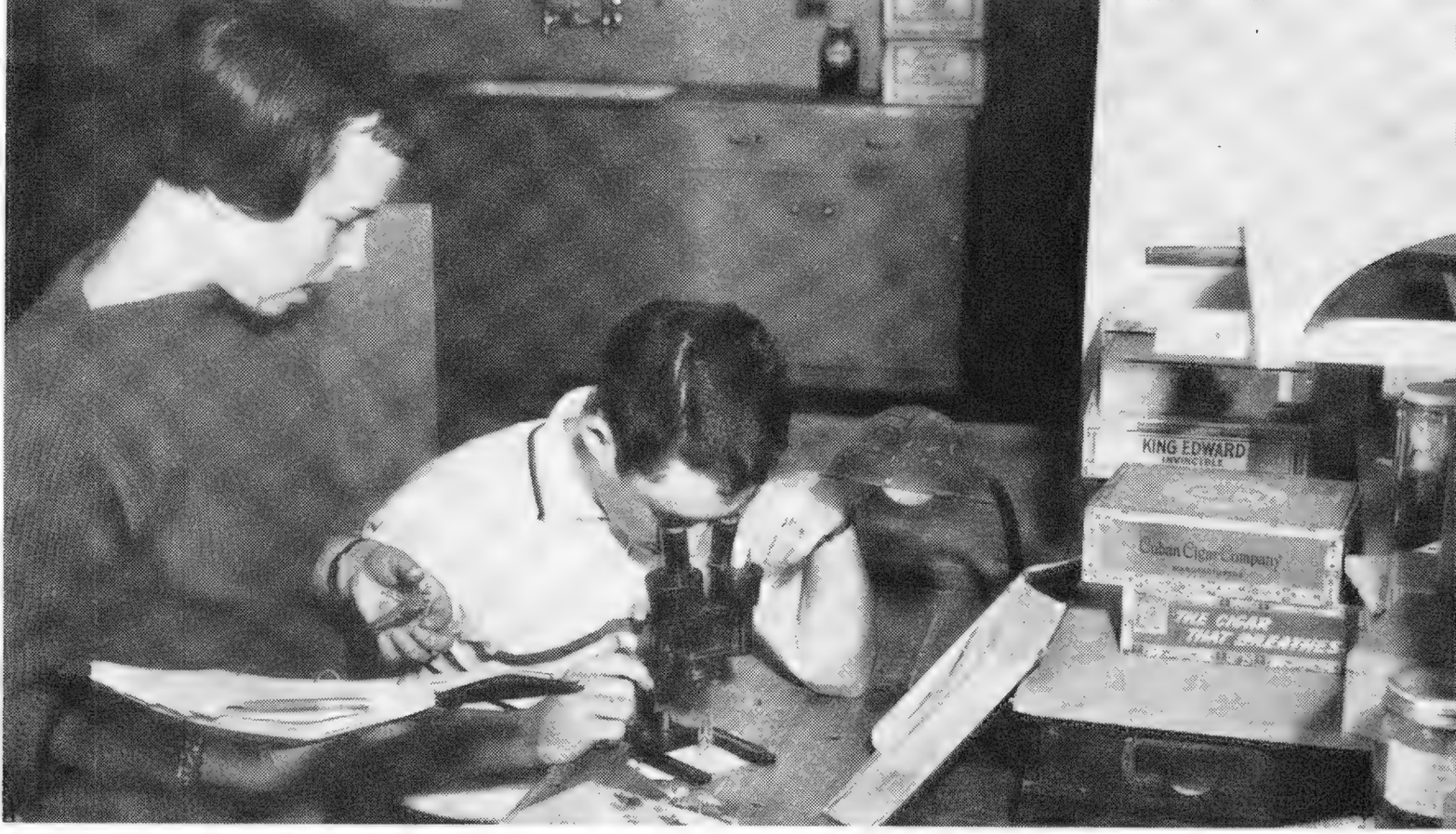
Particular mention should also be made of the Pacific Telephone and Telegraph Company which contributed telephone switchboard equipment for the automatic control system.

Since the Planetarium opened in November, 1952, attendance has steadily increased. The first full year of operation, 1953-54, saw a total of 89,303 persons attending the regular programs, and 22,854 attending the special school programs.

School classes and organized youth groups of all kinds crowd Morrison Planetarium's highly popular special programs for school children.

During the year ending June 30, 1958, 113,742 persons attended the regular programs and 51,787 attended the school programs. Thus while the regular attendance increased 27 per cent, attendance at the special school programs increased 121 per cent during this four-year period. Both figures afford evidence that the Planetarium is meeting a definite public need, and rendering an increasingly important educational service.

In addition to giving lectures in the Planetarium, the Planetarium staff has been called on increasingly, as man's interest in space has mounted, to talk on radio and television programs, and before various interested groups. During 1957-58 such outside appearances have averaged more than one a week.



In the laboratory of the Student Section, two members study insects with a microscope. All collections in the Student Section are collected and prepared by the students themselves.

Student Section

For many years the Academy has been in the vanguard of institutions encouraging youth in the study of science. Its Student Section has provided both facilities and guidance for young people with a serious interest in science to pursue that interest in the most rewarding way. It operates on an informal basis, with students coming in after school and on Saturdays and holidays to work on projects of their own selection, under the helpful direction of trained supervisors.

In the summer of 1950 the Student Section moved into new and spacious quar-

Budding geologists in the Student Section study and prepare specimens collected on their field trips.

ters on the ground floor of the Hall of Science. These quarters include a large, well-lighted laboratory, a library alcove stocked with the most useful books and magazines on natural history and general science, and a lecture room. A beaded screen and draw-curtains for darkening the lecture room for projection of slides and motion pictures were a gift of Mrs. Ira Kahn. Valuable files of bound periodicals were given by Dorothy Dean (Mrs. F. A.) Scott. Through the generosity of Mrs. Ralston L. White, the 42-acre White Estate on the south slope of Mount Tamalpais was made available to the Student Section for natural history and ecological studies from 1951 to 1957. Generous assistance of the Rosenberg Foundation is also gratefully acknowledged.

Much emphasis is placed on field work, both local trips and trips of longer duration, to the seashore, the Sierra, the desert and localities where fossils can be collected. "Graduates" of our Student Section are at home both in the field and in the laboratory. Many of them go on to professional careers in science; and for those who do not, some phase of natural science is likely to remain a life-long interest.

This phase of the Academy's activities, important and valuable as it is, has always had to operate with inadequate funds. Here is another opportunity for some generous sponsor or group to make a real investment in the future.

Film Library

In 1953, at the suggestion of Charles Page, then Chairman of the Academy's Board of Trustees, a Film Library was started at the Academy. A fund for purchase of films was made available from the May T. Morrison Trust Estate; and a grant was obtained from the Rosenberg Foundation for the purchase of films and of storage cabinets and other necessary equipment, and to pay operating expenses for an initial period of three years.

This library now includes 100 films in color, covering all phases of science. It affords a useful reservoir of films for Academy use, and renders a valuable service to schools and individuals, to whom films are available on a rental basis sufficient to

The annual Bay Area Science Fair, held each spring at the Academy, brings thousands of young visitors to view their fellow students' science projects.

cover the cost of handling. New films, as funds are available, are added each year. A catalogue is available upon request.

Bay Area Science Fair

As in years past, the Academy again was the scene of the Annual Bay Area Science Fair, April 16-20, featuring 350 exhibits constructed by school children in San Francisco and the Bay area.

Attendance during the five-day period of 1958's Fifth Annual Fair was 81,200, exceeding by nearly 15,000 the total 66,500 attendance figure for the 1957 Fair. Not only was the 1958 Fair better attended than the 1957 event, it was generally agreed that the Fifth Annual Bay Area Science Fair was the best since the first Fair was held at the Academy in 1954, both in terms of increased attendance and in the consistently improved quality of the exhibits.

These Science Fairs perform an important service in stimulating scientific interest and creativity among students from the seventh through the twelfth grades. The holding of the Fair at the Academy is another example of how the Academy's facilities are made available and utilized for outstanding educational projects.

Television

As "Science in Action," the Academy's well-known television program designed for the entire family, completed its eighth successful year in June, 1958, there was good news in the Academy's Television Department. During the year ending June 30, 1958, the numbers of viewers reached more than 600,000 for an all-time high in the history of the program.

"Science in Action" has proved its popularity with viewers; it also has received an extraordinary number of local and national awards, citations, and honors, to become one of the most awarded programs on television. Its awards, citations and honors include: nominated for Peabody Award and endorsed by California Listening Post, all eight years it has been on the air, 1950-58; Special Endorsement, California State Department of Education, Secondary Schools, each year the program has been on the air, 1950-58; American Public Relations Association, Certificate of Merit, 1951; San Francisco Parent-Teachers Association Award, 1951; San Mateo County District Parent-Teachers Association Award, 1951-52; American Association of University Women, San Francisco Radio-Television Award, 1951; School Broadcast Conference, Chicago, Best Cultural and Educational Program, 1951; San Francisco TV Prevue viewers' poll, First Place, 1951; San Mateo *Times* viewers' poll, Favorite 1951, Second or Third Place every year since; San Francisco *Examiner* viewers' poll, Favorite Local Program 1951, 1952, 1953, 1954, and 1955; Second place, 1956, 1957, and 1958.

Others are: Academy of Television, Best Cultural and Educational Program, 1951, Best Live Show, Second Place, 1951; Academy of Television, Best Cultural and Educational Program, 1952, Best Live Show, 1952; Ohio State University, Best Cultural Program, 1952; Command Film Presentation, Royal Astronomical Society of Great Britain, program on "Stellar Evolution," 1953; Denver *TV Guide* viewers' poll, Top Instructional Program, 1954; Special Citation, program on "Exploring Space" published in *Television in Community, School and College,* by Jennie

Waugh Callahan, Columbia University, 1954; Nobel Prize Awards Committee, film presentation of "Discovery of the Virus," Stockholm, Sweden, 1954; British House of Commons, film presentation of "Science in Action" to demonstrate quality of commercial television in U. S. A., 1954.

American Banking Association, Special Award to American Trust Company, sponsor of live program, 1954; Academy of Television Special Achievement Award, 1954; Hawaii Education Association, Best Educational and Cultural Program, 1954; Academy of Television, Excellence in Education Award, 1955; Payne Communications Award, to Benjamin Draper, Executive Producer, 1955; Albuquerque, New Mexico, viewers' poll, Favorite Educational Program, 1955; San Francisco Dental Society, Special Award to Benjamin Draper for valuable contributions to dentistry on "Science in Action," Explorers of Tomorrow, and dentistry series on KQED; Wildlife Society Conservation Education Awards, 1956; Thomas Alva Edison Award, to Station KRON-TV for "Science in Action" and Explorers of Tomorrow, 1956; American Public Relations Association, Silver Anvil Trophy for best use of television by an educational institution, 1956.

Benjamin Draper, executive producer, and Dr. Earl S. Herald, program host, look with pride at impressive array of awards received by the television series "Science in Action."

Alfred I. duPont Award, 1954; Westinghouse Broadcasting Company, History Award, 1957; California State Fair, Silver Medal Top Show Award, 1957; American Association of University Women, Merit Award, 1958; and Ohio State University, Honorable Mention—Cultural Program, 1958.

Explorers of Tomorrow, a series designed to interest intermediate school students in science, which is also produced by the Academy's Television Department, will start its fourth year in September. It is sponsored by Station KRON as a public service. "Science in Action" has been sponsored since its beginning by American Trust Company.

In a highly praised special project this year, the Television Department conceived and produced a live radio and television series entitled "American Medical Association Daily Bulletin of the Air," which covered the activities of the American Medical Association's annual convention held in San Francisco in June. The series marked the first time the AMA, sponsored by Merck, Sharp & Dohme, convention proceedings have ever been officially covered in the media of radio and television.

Research and Publication

The principal significance of museums to science, and the principal respect in which they differ from universities as institutions for research, is that they acquire and maintain large collections of plants, animals, minerals, etc. Some universities, or departments of universities, do maintain substantial collections, but to this extent they are functioning as museums. Generally speaking, if one wants to study a large collection of beetles, or Asiatic snakes, or oceanic birds, he goes to museums rather than to universities. A professor of entomology in a Pacific Coast university recently remarked, "It is impossible to do any serious taxonomic work on western insects without coming to the California Academy of Sciences."

During the fiscal year 1957-58, the Department of Entomology added 107,040 specimens to its collection; 8,072 specimens were added to the Department of Botany's collection; Geology accessioned 121 type specimens plus uncounted other specimens; the Academy Library was enriched by 12,844 items; Herpetology acquired 554 more specimens; an increase of 807 specimens was recorded in the Department of Ichthyology; and the Department of Ornithology and Mammalogy accessioned 478 specimens of birds, mammals, eggs, and sets of eggs. At the end of the year, Steinhart Aquarium had a total of 6,090 living specimens of fish, reptiles, amphibians, and invertebrates, including 351 separate species.

The acquisition of collections requires careful work in the field, much of it done by museum curators and their assistants. A field trip may last a day, a week, a month or a year. Scores of field trips, too numerous to chronicle, are made by members of the Academy's staff every year. If a field trip lasts a month or more, it automatically rises to the dignity, and even the associated romance, of an "expedition." A member of an expedition, sweating in an African jungle, or fighting mosquitoes along the Yukon, or extricating a truck stalled in desert sand with the temperature at 115° F, is not too likely to be aware of the romance—although it may occur to him later that he has had an interesting and memorable time.

Of Academy field trips rating as "expeditions" in the last few years we may mention in particular the following:

In 1951 Francis P. Farquhar, then President of the Academy, visited India while on a trip around the world, and arranged with F. Charlton Thomas of New Delhi to conduct an Academy expedition into the Himalaya Mountains. This resulted in a considerable collection of plants and of insects, and of some paleontological material, and in the exploration of some remote areas along the border between India and Nepal.

Baja California was visited in May-June, 1952, by an Academy expedition consisting of Joseph E. Slevin, Curator of Herpetology, and Dr. Robert T. Orr, Curator

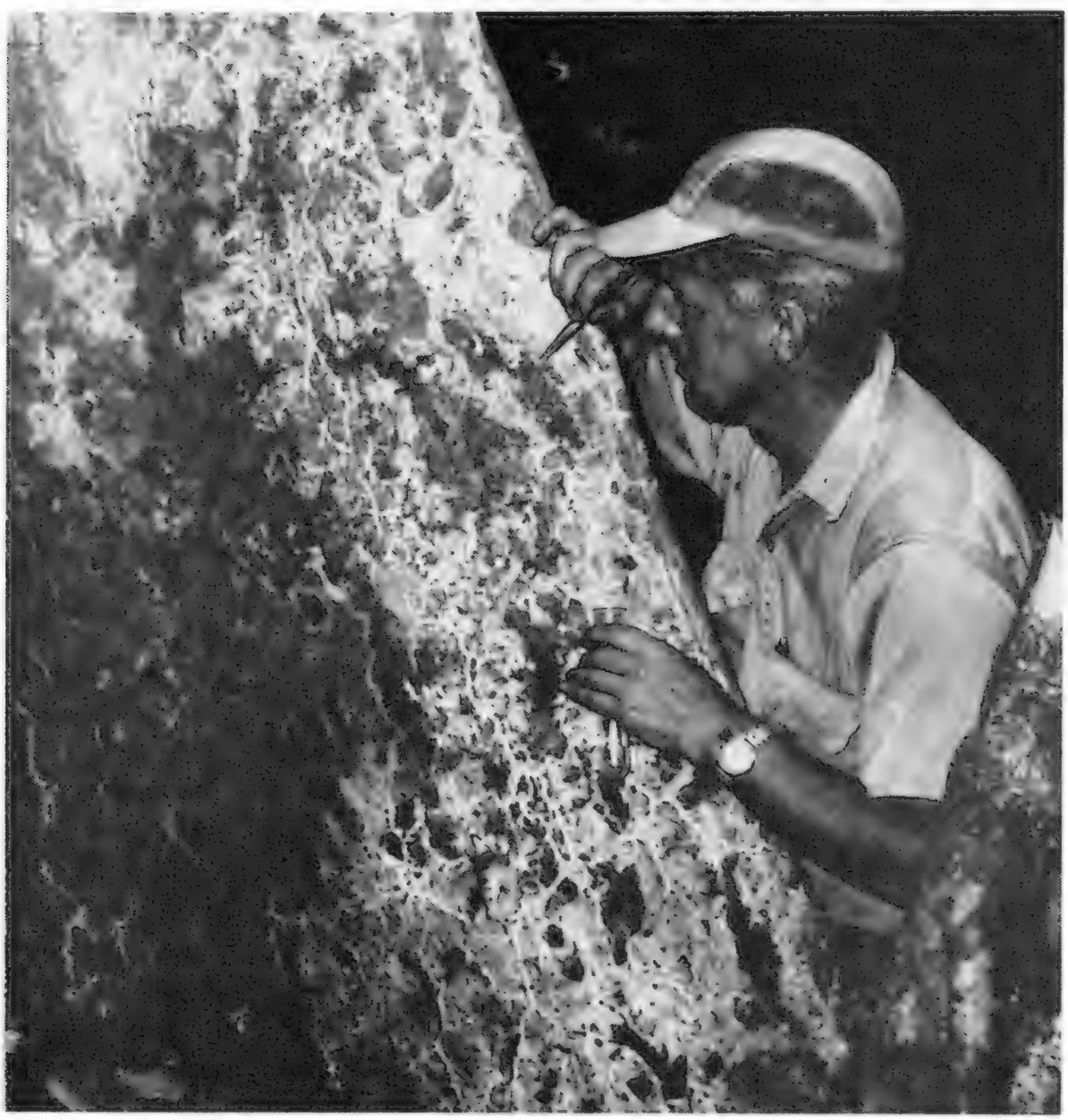
Dr. Edward S. Ross, Curator of Entomology, and Robin Leech (on cab) ready modern "covered wagon" for African expedition.

of Birds and Mammals, accompanied by Professor Francis P. Filice of the University of San Francisco, and Samuel Carpenter, a graduate student. The peninsula was revisited in 1955 by Slevin, Orr, and Cecil Tose, Curator of the Department of Exhibits.

Bird collecting in Mexico has been carried on for the Academy by Dr. J. Dan Webster, Research Associate, in the summers of 1950 and 1952, and in September-

October, 1955; also by J. Stuart Rowley in 1958. Mr. Rowley obtained the first known nest and eggs of the rare vireo, *Neochloe brevipennis.*

Dr. G. Dallas Hanna, Curator of Geology, with Mr. Slevin, visited the Gulf of California and its islands in March-April, 1953, on the research ship *Orca,* as guests of its owner, E. W. Sefton. Dr. Hanna also made a trip on the California Fish and Game vessel *N. B. Scofield,* in June, 1953, and on the *E. W. Scripps,* of the Scripps Institution of Oceanography, to Socorro and San Benito Islands, December, 1953.



Dr. Edward S. Ross collects specimens of the little-known insect group Embioptera from the trunk of an African tree.

Dr. Hanna transferred his activities to the Arctic in 1954, took a leave of absence from the Academy, and served as Director of the Arctic Research Laboratory at Point Barrow for six months. He liked it so well that he went back and spent the entire year 1956-57 at Point Barrow as a special research worker for the Arctic Institute of North America.

Leon Salanave, former astronomer for the Academy, checks telescope setting during 1956 "Mars Patrol" expedition on Junipero Serra Peak.

In the summer of 1957, the Director of the Academy spent five weeks at Point Barrow, working on a special project, the possible influence of radar on flying birds.

Dr. Edward S. Ross, Curator of Entomology, in his pursuit of the little-known insect group Embioptera in various parts of the world, has conducted two major expeditions in the past four years—one of seven months' duration to Peru, Ecuador, and Colombia in 1954-55, and one to Africa lasting an entire year, in 1957-58. On both expeditions he was accompanied by his wife, Wilda, and on the former by E. I. Schlinger, on the latter by Robin Leech.

The expedition to South America was financed in part by a Guggenheim Fellowship; the expedition to Africa was financed jointly by friends of the Academy, by the National Geographic Society, by the Academy's Trustees and by Dr. Ross himself. This expedition traveled 26,000 miles by truck through the Belgian Congo, East, South, and West Africa, and brought back to the Academy what is very possibly the world's largest collection of African insects. This was a by-product. Dr. Ross also brought back scores of new species of Embioptera, which he went to Africa primarily to study, and many cultures of living Embioptera which are being maintained and studied in the laboratory.

The Academy's newest department, the Department of Astronomy, which can bring back nothing but information, has organized two significant expeditions.

In 1954 Leon Salanave, then Associate Curator of Astronomy, and C. P. Butler, Research Associate, went to Sweden to observe the total eclipse of the sun on June 30 of that year.

In August-September, 1956, Mr. Salanave instituted the "Mars Patrol" on the top of Junipero Serra Peak in the Santa Lucia range. At this time the planet Mars was at one of its closest approaches to the earth, and Serra Peak was an especially good point of observation because of its altitude and freedom from fog and haze. It was also the most westerly point in the United States at which observations of Mars were made. Mr. Salanave observed and photographed the planet night after night.

Logistically he was assisted by other curators—John Thomas Howell, who visited the mountain to collect plants, Hugh B. Leech, who visited it to collect insects. This is an example of the way in which Academy curators of diverse interests work together to obtain the maximum result from any opportunity.

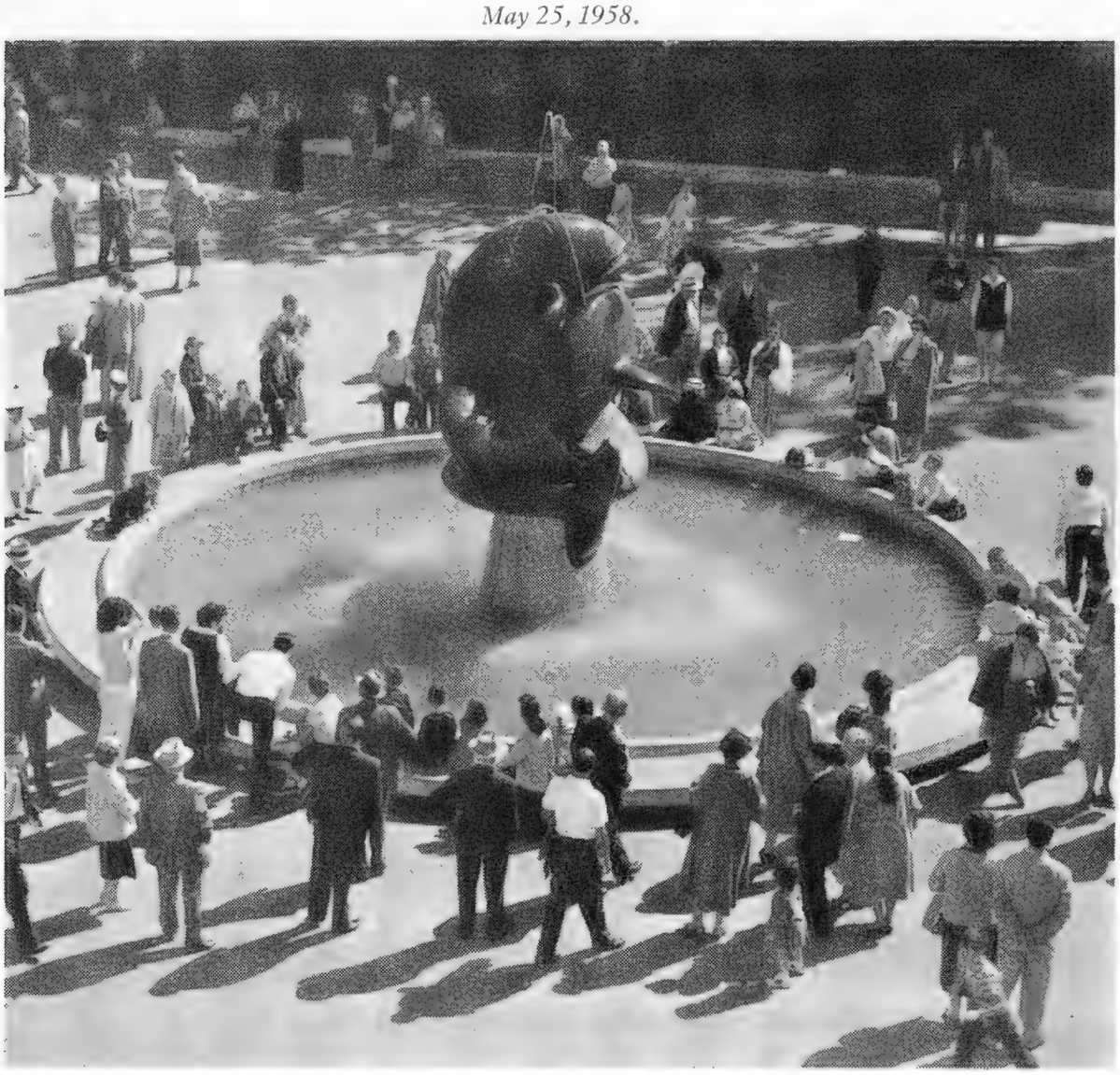
One result of the "Mars Patrol" is that this program, as others which have been conducted by the Academy, attracted so much attention that Mr. Salanave was called to a better position by the University of Michigan and later by the University of Arizona. The Academy has given similar opportunities to many young men of ability who have gone on to larger enterprises, and it is glad to have provided opportunity for the necessary training and experience.

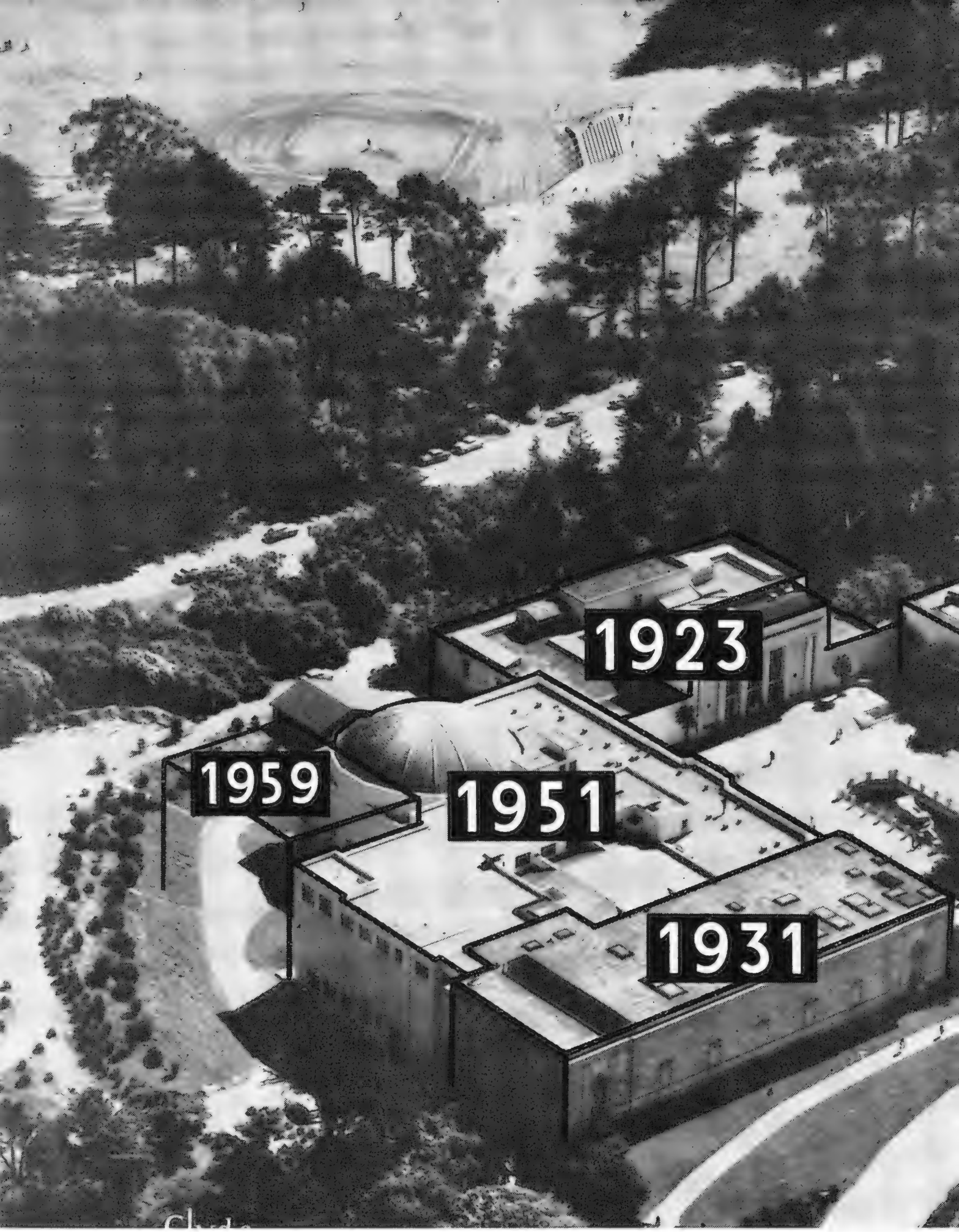
The real and permanent product of a research institution is its publications. Publications by the Academy's staff have, for a number of years, averaged between fifty and sixty a year—somewhat more than one a week. These range from short notices to long monographs and books.

One publication of special note is the Centennial Volume, published in recognition of the Academy's one hundredth anniversary in 1953.

This unusual volume of 807 pages by 38 distinguished authors from both America and Europe has gone into practically all major libraries of the world and is a symbol of the tremendous educational influence that this scientific institution has had through a century of time.

The Whale Fountain, sculptured by Robert Howard, dominates the Academy's courtyard. Originally, the whales adorned the San Francisco building at the 1939–1940 World's Fair. The fountain was dedicated at the Academy on May 25, 1958.





Since North American Hall was first opened to the public in 1916 the Academy has made available to Californi
are worth more than $5,000,000. Steinhart Aquarium was completed in 1923; Simson African Hall was fi
Mailliard, Jr., Memorial Library and Alice

ins more and more public education and research facilities until today its buildings alone in Golden Gate Park st used in 1931; the Hall of Science was opened in 1951; and in 1959, the newest addition, the John Ward Eastwood Hall of Botany, will be completed.

CALIFORNIA ACADEMY OF SCIENCES
STATEMENT OF INCOME AND EXPENSES
FOR THE YEAR ENDED JUNE 30, 1958

INCOME:	
City and County of San Francisco for Operation of Steinhart Aquarium	$127,185.05
Less Aquarium expenses	127,185.05
Remainder	Nil
Endowment—Rentals from Commercial Building—net of $11,024.24 for depreciation, amortization of lease cost and incidental expense	98,967.76
Dues	17,066.50
City and County of San Francisco for support of Museum activities	45,749.47
Planetarium, less expense of $63,465.94	24,038.72
Sale of scientific publications, books, postcards, etc.	20,259.37
Television	7,047.92
Miscellaneous	31,629.82
Total	244,759.56
EXPENSES:	
Scientific Departments	81,306.08
Museum and general	105,471.40
Administrative Salaries	18,125.86
Publications	24,875.35
Interest	7,612.50
Other	20,784.42
Total	258,175.61
NET LOSS	$ 13,416.05

ACCOUNTANTS' REPORT

California Academy of Sciences:

We have examined the balance sheet of the California Academy of Sciences as of June 30, 1958 and the related statement of income and expenses for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances, except that it was not practicable to extend the examination of contributions beyond accounting for the receipts as recorded.

In our opinion, on the basis stated above, the accompanying balance sheet and statement of income and expenses present fairly the financial position of the Academy at June 30, 1958 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

HASKINS & SELLS

August 11, 1958

CALIFORNIA ACADEMY OF SCIENCES — BALANCE SHEET, JUNE 30, 1958

GENERAL OPERATING FUND

ASSETS		*LIABILITIES*		
Cash	$ 14,523	Accounts Payable (Note 2)		$ 10,931
Accounts Receivable	8,451	Accrued Interest on Note Payable of the Capital Fund		1,669
Inventory of Books and Postcards—At Cost	9,083	Total		$ 12,600
Unamortized Portion of Cost of Acquiring Lease on Rental Property (Lease expires 1984)	17,986	General Operating Fund:		
		Balance, beginning of year	$50,859	
		Net loss for the year	13,416	
		Balance, end of year		37,443
Total	$ 50,043	Total		$ 50,043

SPECIAL PURPOSE FUNDS
(Restricted as to Use)

Cash	$ 100,648	Special Purpose Funds:	
Security Investments—At cost (quoted market value $294,987)	279,637	Construction	$ 191,142
Accounts Receivable	8,428	Entomology	33,781
		Astronomy	32,254
		Exhibition	30,525
		Research Expeditions	23,882
		Botany	17,462
		Geology	11,435
		Lectures	10,204
		All other	38,028
Total	$ 388,713	Total	$ 388,713

CAPITAL FUNDS

Cash	$ 50,912	Note Payable to Insurance Company, 3⅝%—Due October 11, 1959, deed of trust given on rental property	$ 210,000
Security Investments—At cost (quoted market value $103,022)	101,442	Capital Funds	1,478,554
Rental Property—net after depreciation of $472,911 (pledged as security for $210,000 note payable)	651,992		
Collections, Library and Equipment	880,774		
Construction in progress	3,434		
Total	$1,688,554	Total	$1,688,554

NOTES: 1. Buildings located in Golden Gate Park carried on the books of the Academy at $2,807,180 are not shown above. Title to the buildings is vested in the City and County of San Francisco.

2. Telephone charges of $5,564 billed to the Academy by the Pacific Telephone & Telegraph Company have not been paid by the Academy and have not been reflected in the financial statements pending the result of a dispute between the telephone company and the City and County of San Francisco. It is not known at this time whether the Academy or the City will be liable if the charges are ultimately deemed proper.

CALIFORNIA ACADEMY OF SCIENCES

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G. Dallas Hanna, *Administrative Assistant*
Allyn G. Smith, *Executive Assistant*
Vashti F. Hawley, *Secretary to the Director*

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Dorothy Lohmeyer
Evelyn Shaw

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Edythe N. Metcalfe
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Ethel Zombro

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Edward F. Kessel
Robert C. Miller
George F. Papenfuss

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Walter Schneebeli, *Collector*

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Brita Boeckel, *Assistant*
Olga Padgett, *Assistant*

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John W. Green, *Research Assistant*

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Velma Harris, *Assistant*
Johan Kooy, *Assistant*
Ray Strong, *Assistant*
Adrien Voisin, *Assistant*
Franklin Kreighbaum, *Cabinet Maker*

FILM LIBRARY

Otto Graf, Jr., *Librarian*

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Allyn G. Smith, *Research Malacologist*
Myrtle Kuhlmeyer, *Assistant*

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DEPARTMENT OF ICHTHYOLOGY

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Lillian Dempster, *Assistant Curator*

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Ignatius McGuire, *Associate Librarian*
Miriam Barnett, *Assistant*
Evelyn Nienstadt, *Assistant*

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Hubert J. Bernhard, *Lecturer*
Stuart J. Inglis, *Lecturer*
Roland P. Michaelis, *Lecturer*
Lorraine Rogers, *Student Program Coordinator*
Alvin C. Gundred, *Technician*
Thomas G. Loo, *Assistant Technician*

DEPARTMENT OF ORNITHOLOGY AND MAMMALOGY

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Betty Sue North, *Assistant*

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* Deceased Nov. 4, 1958.

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William Barclay Stephens, *Horology*

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G. F. Ferris, *Entomology**
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Francis X. Williams, *Entomology*

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A. S. Getten, *Instrument Designer*
Alvin C. Gundred, *Instrument Maker*
Fred C. Lehman, *Instrument Maker*
Norman Grant, *Electrical Engineer*
Charles E. Crompton, *Photographer*

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Freda McCaig, *Staff Writer*
Ernest R. Rook, *Art Director*
Barbara Gordon, *Office Manager*
Gertrude Boettcher, *Stenographer*

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* Deceased May 20, 1958.

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Norval Green
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Morris Khan
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Othello Saulsbury
Francis Schell
Earl W. Smith
John Smyth
Peter Tebneff
Nicholas Udaloff
Rachel Wortherly

CALIFORNIA ACADEMY OF SCIENCES

Members

KEY: M—Member Fm—Family Member C—Contributing Member
S—Annual Sponsor L—Life Member P—Patron
B—Benefactor F—Fellow H—Honorary Member

Figures indicate year members joined.

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Abbot, Charles Greely H27
Abbott, C. L. M50
Abowitz, Murray M50
Adams, Ansel E. M35
Adams, Francis B. M57
Adams, William Y. M53
Adamson, Mrs. M. H. M48
Aird, Robert B. M42
Aitel, Allan E. M55
Alameda Free Library M48
Albert, Henry C., Jr. M54
Alexander, S. P. Fm57
Alfred, Brother U. M49
Allard, Irving D. M57
Allen, Miss Alice G. M55
Allen, Mrs. Harry B. M54
Allen, Miss Martha L. M48
Allen, Dr. Mary Belle M57
Allen, Mrs. Maude Rex P52
Allen, Perry O. M54
Allen, Rex M55
Allyne, Miss Edith W. M33L48
Allyne, Miss Lucy H. M33L48
Amendola, Vincent M57
Ammerman, Francis A. M50
Anderson, Lloyd C. M58
Anderson, Ward R. M53
Angerer, Warner W. Fm57
Anthony, Harold E. F56
Arfsten, Rudolph W. M53
Armitage, H. M. M48
Armstrong, Mrs. Leslie L. L53
Arnaud, Paul H. M50
Arnold, Ralph M00L25F29
Ashley, Robert C. M50
Asplund, Miss Mary L. M56
Atkinson, Gordon T. M52
Atkinson, Mrs. Lewis H. M54
Aubertine, Don Jose M50
Augsbury, Mrs. John M50P53
Automobile Club of So. Calif. M58
Axtell, Mrs. Frances M57
Ayer, Charles F. M50

Bach, Mrs. Alfred C., Sr. M55
Bacigalupi, Rimo M48
Bacon, Miss Annette L M57
Bacon, Edward R. M46
Bailey, William A. M57
Baily, Joshua L., Jr. M40
Baker, John H. M49
Baker, Wakefield L45
Baker, Mrs. Wakefield L45
Balcom, Donald M. M56
Baldwin, Mrs. A. S. M48
Baldwin, Miss Frances M53
Ball, David M58
Ball, Miss Grace E. M45
Ballou, Fremont O. M55
Bancroft, Mrs. Paul M46
Band, R. N. M48
Bandy, George L. M12L37
Banker, B. A. P51
Barbat, William F. M19L46F55
Barber, Clinton F. Fm56
Barbour, Allen B. M58
Barbour, James H. M48
Bard, Thomas G. M58
Barfield, Charles V. M52
Barkan, Hans M24L48
Barkas, Walter H. M57
Barler, F. M. Fm56
Barneby, Rupert C. M41F57
Barr, Miss Margaret M48
Barrett, E. Otto M57
Barrett, Miss Mildred F. M56
Barrett, W. G. M49
Bastian, Miss Lois M. M58
Bates, George M48
Baudonnet, Peter E. M50
Baumgaertner, Mrs. Lucile K. M50Fm52
Beach, E. W. M42
Beals, Robert H. Fm55
Bean, George L. M50
Beatty, W. B. M57
Bechtel, K. K. P47F52
Bechtel, Mrs. Kenneth K. P47
Bechtel, S. D. S52
Bechtel, Stephen D., Jr. S58
Beckh, Walter Fm54
Beebe, William H48
Beebee, Martin F. M55
Behm, Dr. Marie M50
Bell, Dickson G. M36
Bell, H. Glenn M50
Belstad, Walter C. M51
Bender, William L. M31L57

Benner, Norton Fm56
Bennett, Eugene D. M29F52P57
Bennett, J. P. M49
Benson, Seth B. M48
Benteen, Harry M48
Benton, Ralph M57
Berg, Finn F. M56
Bergin, Michael M57
Berglund, Harvey M42Fm52
Berryman, Carl W. M49
Berryman, Elmer H. M41
Bertrand, John M55
Berwick, C. C. M53
Best, Elbridge J. M50
Biallas, Joseph E. M57
Bias, Harry James M57
Billeb, Stephen L. M56
Binney, Walter M42
Birkbeck, R. G. M55
Birkinsha, Italia F. M54
Bishop, Mrs. A. V. M48
Bissinger, Newton L48
Bizzell, Eugene B. M55
Black, F. C. M55
Black, James B. L48S52
Blackford, John L. L55
Blackmun, Miss Alice M54
Blackwelder, Eliot M31F44
Blackwelder, Richard E. M53
Blake, Anson S. M30L57
Blinks, L. R. F52
Blois, Marsden S. M56
Blum, H. F. M41F51
Blyth, Charles R. M42L45
Bocqueraz, Leon M12L37
Bodfish, Miss Margaret M57
Boldrey, Edwin B. M50
Bolin, Rolf M33F47
Bonhag, Philip F. M56
Bonnett, Alfred M48
Borchers, Walter C. M41
Borson, Harry J. M49
Boussy, Henri M. M55
Bowen, Mrs. Sarane T. M57
Bower, Albert G. M49
Bowerman, Herbert Fm57
Bowerman, Dr. Mary L. M47
Bowie, Mrs. Robert C. B51
Bowker, Albert G. M56
Bowman, Paul J. M48
Boyd, Miss Louise A. M31F39H49
Boyer, J. F. L48
Boyle, William J. M49
Boynton, Robert D. M46
Braccia, Anthony A. Fm56
Bracelin, Mrs. N. Floy M41L48
Bradbury, N. E. M41F51
Bradley, Harold C. M48F57
Bradley, Loren O. M54
Bradley, Worthen M42
Bradshaw, James P. M58
Braidwood, Roger M54
Braman, Mrs. D. H. M51
Branch, Mrs. Gerald M48
Brandt, Walter C. M53
Brantley, L. Reed M57
Brawner, A. H. L47
Brawner, Mrs. A. H. M55
Brawner, W. P. F. P47S52
Bremer, Bernard C. M48
Brendel, Mrs. Walter G. M52
Brennan, Bernard C. M57
Brenner, John J. M55
Brewer, Miss Jessie Lee M56
Brice, Arthur T. M51
Bridge, Miss Barbara P51
Bridgman, Dr. Olga M42
Briggs, Miss Beryl C. M56
Briggs, John Fm57
Brigham, Henry H. M54
Brislawn, Paul G. M47Fm52
Brock, Kurt S. M50
Brode, J. Stanley M57
Brookfield, Wallace M. M41
Brooks, George W. M48
Brooks, Thomas A. M42
Brown, Charles W. M50
Brown, Leonard C. Fm56
Brown, Leland H. M41F46
Brown, Miss Phoebe H. M53
Brown, Walter C. M56
Browning, G. L. M49
Bruce, Starr S52
Brumund, Richard M58
Bryant, Albert L. M56Fm57
Bryant, Harold C. M39F51
Bryant, Owen P46
Buck, Charles C. M52
Buckley, John C. M57
Buechsenstein, Gustav M48
Bulf, Jeffrey Deering M57
Burch, Iran O. M55
Burch, John Q. M47
Burcham, L. T. M49
Burkhard, William G. M50
Burkland, Carl E. M50
Bush, Chesley M58
Bush, Dr. Mildred M34
Buss, Irvin O. M57
Butler, C. P. M57
Butler, James S. M56
Butterworth, E. M. M18L44
Byce, Malcolm L. M48
Byers, Sanford Fm55
Byrne, Francis G. L47

Cahill, Edward G. M42
Cahill, John E. M50
Calahan, Mills Fm54
Caldis, P. D. M48
Camp, Charles L. M23F29
Campbell, James V. M50
Campbell-Walker, Owen E. M57
Canepa, Roy A. M58
Cannon, Raymond M54
Cantelow, H. Clair M44
Cantelow, Mrs. H. C. M41L42
Carnahan, Philip B. Fm57
Carberry, Matthew C. M53L56
Carlson, Jerome M54
Carlson, Orville E. M57
Carmichael, Leonard F56
Carr, Mrs. Jesse L. M44
Carroll, Howard Fm57
Carroll, Miss Phyllis M57
Carruthers, C. P. M41
Carruthers, R. T. M49
Carter, Miss Annetta M49
Carter, Mrs. Star M56
Carter, W. E. M40
Cary, William S. M48
Casserly, Mrs. John L58
Catholic Round Table of Science M54
Cavins, Mrs. Gertrude W. M57
Chaban, M. L. M23L48
Chace, E. P. M50
Chafee, Henry S. M50
Chamberlain, Joseph P., II M40
Chamberlain, Mrs. Selah L45
Chamberlain, Selah, Jr. M40L48
Chamberlain, W. Edward M23L48
Chambers, Joseph, Jr. M58
Champion, Robert L. M53
Champlin, F. B. Fm54
Chaney, Ralph W. M40F41
Chapman, W. M. M43F47
Chase, Harold S. M48
Chase, Miss Pearl M48
Chaussee, Robert H. C54
Chenoweth, Miss Gene M51
Chesterman, Charles W. M42F57
Chickering, Allen L., Jr. M50F52
Christensen, Juel L. M44
Christopher, The Honorable George M56
Christy, Miss Cicely M. M50
Church, C. C. M29F52
Clark, Dr. Frances N. M27F47
Clark, John A. M42
Clark, Warner M52
Clarke, James F. M52
Clausen, Jens C. M46F51
Claxton, Fritz R. M51
Clay, C. I. M53
Clenner, Mrs. Helen M. M57
Cline, Wilson E. Fm57
Clinton, J. Hart M51Fm52
Clyde, Norman M35
Coatsworth, James L. M56
Cobb, Forrest A. M35L41
Coe, John S. M56
Coffee, S. R. M48
Coffin, Richard R. Fm57
Coffin, Sherwood M48
Coggins, Herbert L. M51
Cognetta, Randall A. Fm57
Cogswell, Howard L. M57
Cohen, Emanuel S. M50
Cohn, Herbert M52
Cohn, Miss Ann M53
Colby, Henry V. M57
Coldwell, Colbert P51
Cole, Wilbur V. M50
Coleman, Gano H. Fm56
Coleman, Mrs. M. Ruth M56
Coleman, Miss Persis H. L48
College of Notre Dame M48
Collier, H. D. P51
Collins, Donald C. M48
Collins, George W. M50
Collischonn, Philip, Jr. M57
Colman, Mrs. Edward A. M58
Colvig, William M. M48
Compagno, Vincent I. F57S58
Compton, Eugene M50
Compton, Stuart M57
Congregation Emanu-El Religious School C57
Conklin, Mrs. Gladys M57
Conner, Mrs. R. Homans M55
Connors, Miss Marion R. M57
Conrad, Mrs. Barnaby M55
Conrich, J. Lloyd M50
Constance, Lincoln F52
Cook, Benning Peyton M50
Cook, Edward W. M48
Cook, Mr. and Mrs. Ransom C52
Cooke, William Bridge M50
Cooksey, Donald M55
Cookson, H. W., Jr. Fm57
Coope, Mrs. Bertha M24L48
Cooper, Mitchell G., Jr. C57
Cooper, Robert M. M51
Corbus, Miss Mary MacRae M35
Cordes, Miss Fauno L. M52
Cordes, Frederick C. M32F57
Cornwall, Bruce M24L48F52
Corrigan, Frank J. M40L43
Coulson, Walter M58
Cowan, Ian McTaggart M50
Cowles, Douglas C. M56
Cox, E. Morris C55

Coy, J. William M53
Coy, L. P. M50
Crafts, James F. P51
Cramer, Miss Frances L. M56
Crandall, Kenneth H. M56
Crane, Bruce F. M52
Crane, Kenneth F. M58
Crane, Milton M56
Craven, Mrs. Harriet P. M52
Crawford, Joseph William M31L57
Creel, Richard H. M50
Crespo, Maurice M56
Creswell, Harry I. T. M53
Crippen, Richard A., Jr. M48
Crocker, Charles M17L42
Crocker, Ruel R. M57
Crocker, William W. L20S52
Cronheim, S. P. M50
Cronin, George T. Fm53
Cross, Charles M. L45
Cross, R. H. M48
Cross, Mrs. R. H. L44
Crossan, E. P. S52
Crowley, Thomas B. M48
Cuenin, Mrs. Diane C56
Curran, C. Howard M20F34
Currier, Farnsworth M50
Curtis, Brian M42
Cushing, Mrs. John E. M52
Cutting, James A. M46

Dahl, P. J., Jr. M54
Dahler, Adam M. M20L46
Dailey, Gardner A. M55
Dakin, John H. M54
Dakin, Mrs. Richard Y. Fm54
Dalke, Paul D. M57
Danforth, Charles H. M30F33
Daniel, C. W. Fm57
Darling, Blake M50
Dasmann, Raymond M57
Davidson, Forrest B. M56
Davies, Miss Una V. M48
Davis, Miss Louise M54
Davis, Mrs. Marion E. M50
Davis, Norris K. M23L51
Davis, W. N. M50
Dawson, Percy M. M50
Day, David E. M58
Day, Edward C. M28L53
Day, Leonard H. M46
Day, W. C. M48
De Bisschop, Richard Fm56
Decius, L. C. M24L48F57
Deering, Miss Ellen L. M50
de Guigne, Christian, III L55
DeKinder, Mrs. Martha E. M57
de La Harpe, Miss Jacqueline E. M50
DeLaney, The Reverend E. T., Jr. M58
de Lorimier, Alfred A. Fm55
Delprat, G. D. M50
De Moor, Miss Janice C. M56
Dempster, Mrs. Lillian J. M49F57
Dempster, Robert P. M41F52
Dennis, Miss Phyllis Carolyn M56
Derby, Mrs. Charles C. M31L57
Desloge, Joseph M49
Deuel, Francis M41
Dewhirst, William H., Jr. M50
Dickey, Lloyd B. M46
Dickinson, B. N. Fm56
Dietz, Curt M51P57
Dillon, William E. M48
Dittli, Albin M56
Dittli, Joseph M57
Dittman, Harold C. M51
Divers, George M. M31L57
Divita, Fred A. Fm56
Dobbins, Mrs. Hugh T. M48
Doerksen, I. W. M57
Dole, Alfred R. M50
Donnell, Dewey P48
Donohoe, Joseph A. L45
Dorgeloh, Justin R. M50
Dorsey, Miss Charlotte M57
Dowsett, F. L. L48
Drake, Frank B. M53
Drake, William G. M48
Draper, Benjamin M51
Draper, Hal D. M42
Driver, Herschel L. F56
Drown, Miss V. Newell M41
Drury, Aubrey M41
Drury, Newton B. M41
Ducoing, Elmer C. M50
Dudziak, Joseph L. M55
Dummel, Robert J. M58
Duncan, C. D. M41
Dungan, J. Smith M49
Dunlap, David C. Fm53
Dupont, Paul R. M53
Durand, W. F. M21F26H45
Durham, Mrs. Jane Roberts M42
Durham, J. Wyatt M48F51

Eads, Clark O. M46
Eakin, Richard M. M45F47
Earle, E. Cecil M50
Ecklund, L. E. M50
Edelstein, Harold C58
Edison, L. H. M58
Edmonds, Elmer V. M50
Edwards, Miss Marietta M31L54
Ehrlich, Philip S. M42
Ehrman, Joseph, III M54
Ehrman, Sidney M. L49

Ehrman, Mrs. Sidney M. L49
Einarson, Arthur M57
Einarsson, Sturla F52
Eising, Dr. Lucile M42
Ekenberg, Arvid C. Fm58
Elberling, C. W. C52
Elder, Clayburn C. M48
Elder, William H. M57
Eldridge, John H. M51
Elliott, Raymond L. M57
Elliott, Roy H. M52
Eloesser, Leo M30L54
Elsey, Charles L45S52
Embury, Meldon A. M56
Emge, Ludwig A. M27L52
Engelhart, Miss Karen C. M57
Erickson, Carl E. M53
Erickson, Mrs. Lennart G. M51
Essig, Edward Oliver M13L38F44
Etzel, O. D. M48
Evans, Evan C., III M50
Evans, J. Marshall M48
Evans, John Paul M50
Everett, Miss Alice R. M48
Evers, Mrs. Albert J. M48
Everson, George M48
Ewing, Gifford C. M49

Fagan, Paul I. L38P57
Fahey, Thomas M58
Fahy, Neil E. M48
Fair, Harry H. L48
Farley, Niall Patrick M50
Farquhar, Francis P. M24L48F52
Farquhar, Mrs. Marjory B. M51
Farrington, Charles R. M57
Fehleisen, Fred M50Fm52
Felton, E. L. F52
Fennelly, Mrs. Joseph C. P44M45F52
Ferris, Joel E. M48
Fertman, Robert M57
Fick, Mrs. L. M51
Finn, John M48
Finn, John, III M56
Fisk, Irving L. M56
Fiske, Stephen B. M48
Fitch, Kenneth R. M48
FitzSimmons, Edward R. M57
Fleming, Mrs. Thomas M48
Flint, Philip S. M58
Flock, Claude E. M47
Flood, James L48
Floyd, Mrs. B. C. M52
Follett, Wilbur I. M27F52
Follis, R. Gwin S52
Fong, Edward E. M50
Forbes, Donald M48
Forbes, John F. M11L36
Ford, Thomas L., Jr. M55
Foree, Lynn M50
Forster, Merle M58
Forster, Paul Q. M51
Forsythe, John, Jr. Fm57
Foster, Arthur W., III M48
Foster, Leland M51
Foster, Miss Lucile E. M50
Foster, William P48
Fox, Mrs. Belle K. M50
Frager, Russell A. M53
Francis, C. H. M50
Frandsen, Peter M42F46
Franklin, Roy M48
Fraslin, C. J. M48
Frazer, Mrs. Marie E. M58
Freeman, W. H. & Co. M57
French, Miss Muriel T. M57
French, W. H. M30L57
Fresno State College Library M53
Freyermuth, Otto G. M49
Frick, Edward L. M51
Friedman, Mrs. Martin Fm58
Friedman, Nathan J. Fm55
Friedman, Samuel D. M56
Fries, William M12L37
Frizzell, Mrs. Harriet E. M39F57
Frost, Mrs. Frank J. M58
Fry, Donald H., Jr. M58
Fuerstner, Paul G. M50
Fuidge, Miss Amy M56
Fulcher, Miss Claire M50
Fuller, George P. M20L46
Fuller, H. Harrison L48
Fuller, John D. M53
Fulton, Lee M50
Funsten, B. R. L48
Funsten, Mrs. B. R. L48
Furlong, Mrs. H. W. M53
Furniss, George B. M48
Furst, Peter T. M55

Gaines, Mrs. Edward F. M48
Gale, Maurice A. C58
Galen, David J. M57
Galloway, Alan J. M28L52
Galloway, Terry R. M58
Galvin, John M58
Gamero, Antonio M48
Gann, Ernest K. M57
Gardinier, Miss Inez M49
Gardner, J. E. M50
Gardner, Leo R. M56
Garland, L. H. M54
Garrett, Benjamin F. M54
Geiger, J. C. M39F44
Geiger, James M. M50
George, J. Morrille M34

Gerbode, Frank M50
Gerlinger, Louis M48
Gerrard, Miss Constance E. M43
Gester, George Clark M16L41F52
Gester, Stephen H. M54
Getten, Albert S. M46
Getten, Mrs. Albert S. M43
Ghirardelli, D. Lyle M30P34
Gibbons, Morton R., Jr. M37F56
Gibson, James B. L54
Gibson, Thomas E. M50
Gifford, Edward Winslow M12L37F52H54
Gilbert, Miss Roberta M48
Gill, Philip M48
Gillette, Mrs. E. S., Jr. C57
Gilman, P. K., Jr. M50
Girard, Mrs. Frank R. L31
Glenn, T. H. M48
Godkin, John B. M57
Goethe, C. M. M37C52P56
Goff, Othel G. M50
Goldman, Samuel A. M44
Goldschmidt, Richard B. H57
Goldsmith, Louis Fm55
Goodrich, Mrs. Chauncey S. M15L40
Gordon, Garford G. M50
Gordon, Mackenzie, Jr. M29L47F55
Goshkin, Jack E. M55
Gottfried, Samuel M48
Graf, Otto Walter, Jr. M50
Graf, Victor D. Fm56
Graham, Walter C. M54
Grant, Norman M53
Grant, U. S., IV M23L48F55
Gray, Harold F. M42
Gray, Harold F. M58
Greeby, Raymond M45
Green, Mrs. Arthur M50
Green, David S. M55
Green, George M38
Green, G. Homer M50
Green, O. G. M53
Greenberg, David M. M46F56
Greenberg, Stuart N. M58
Greenberg, Stuart N., Jr. M58
Greene, A. Crawford P51
Greenlaw, Charles O. M57
Greenlaw, Colin T. Fm56
Greensfelder, Bernard S. M54
Greenspan, Francis S. Fm58
Gregg, Wendell O. M44
Gregory, Miss Beverly E. M51
Gregory, Donald M. M57
Gregory, Donald, Jr. L42
Gressitt, J. Linsley P44F52
Greuner, William M58
Grew, Frederick J. Fm56
Griffin, Allen M58
Griffith, James M50
Griffiths, Farnham L45
Grimm, Kenneth E. M47
Grinnell, Mrs. Joseph M44F56
Grinnell, Mrs. Mary D. M56
Grogan, Edward G. F. M57
Grosvenor, Gilbert M21F44
Groves, H. L. Fm57
Grubb, D. Hanson M50C52
Grubb, Edward H. M49
Grunsky, Charles M58
Grunsky, Miss Eugenia M57
Guedet, The Reverend Edward M32L43F52
Guensler, Fred R. M58
Gundred, Alvin C. M51
Gustafson, Joel M52
Guthrie, Miss Esther L. M36
Gunst, Morgan A. L48

Haas, Edward T. C53
Haas, Ted M57
Haas, Walter A. P47
Hackney, Robert N. M58
Hadden, Miss Fannie M50
Hadik-Barkoczy, Miss Mary P. M57
Hagerty, Howard M53
Hahl, Ernest A. M42
Haight, Roy A. C56Fm57
Haken, Dr. Dorothee M. M57
Halderman, Boyd F. M58
Hale, Elwyn C. M48
Haley, James F. M57
Haley, Philip Sheridan M19L39
Hall, Ansel F. M20
Hall, E. Raymond M30F41
Hall, Henry S., Jr. M50
Hall, James L. Fm56
Hall, Theron W. Fm58
Halling, Lawrence R. M54
Halloran, R. A. M46
Halstead, Bruce W. M49
Hambrook, Richard E. M58
Hamlin, Mervyn R. M57
Hammond, Miss Doris M56
Hancock, G. Allan P33
Haney, William E., Jr. M57
Hanks, Mrs. Abbott A. M40
Hanna, G. Dallas M19F29L51
Hanna, Mrs. G. Dallas M52
Hannam, Mrs. W. H. M48Fm52
Hannon, James T. M58
Hansen, H. Hilt M54
Hansen, H. N. M26L51
Hansen, Herbert A. M48
Harbison, Miss Julia M48
Harding, John G. M48
Hardy, Mrs. Lucy M55

Harle, Oliver L. M50
Harmon, Mrs. A. K. P M48
Harmon, Irvin Woodbury M49
Harper, Harold A. M48
Harrington, Donald C. M40
Harrington, George L. M50
Harris, Bernard M58
Harris, Jerome A. M58
Harris, Miss Velma R. M32
Harrison, B. M. M32F35
Harrison, Ed N. M48
Harrison, Robert A. M58
Harron, Tracy W. M49
Harroun, Dr. Phyllis M50
Harry, Robert R., Jr. M50
Harry, William J. Fm57
Hart, George H. M50
Harvey, Harold I. M56
Harvey, Paul A. M51
Haseltine, Charles Fm55
Hastings, R. P. M30L57
Hatch, Melville H. M50
Hatfield, George J. M16L41
Hause, Donald P. M50
Hausmann, A. R. M49
Hawes, Henry Q. L48
Hawes, Mrs. Henry Q. L48
Hawkins, John E. Fm57
Hawkins, Ralph M49
Hawley, Major Margery C. M53
Hayes, L. T. Fm55
Hayward, Miss Ida R. M20L46
Heaton, Charles D. M49
Heid, Graham L40
Heider, F. B. M34
Heimann, Mrs. Richard M48
Heinrich, Luis S. M57
Heintz, Ralph M. M53
Heintz, Ralph M., Jr. M50
Held, Ernest R. M58
Helland-Hansen, Bjorn H47
Heller, Edward H. S52
Hellman, I. W. P48
Hemberger, Arthur J. Fm55
Hemphill, Donald V. M48
Henderson, Bruce H. M58
Henderson, Pearson M51
Hendricks, Henry W. M56
Hendrickson, A. Preston Fm58
Hendrickson, Miss Mary M48
Henricks, Paul E. M56
Henriques, Douglas E. M49
Henshaw, Edward C. M52
Henshaw, W. G. M57
Herald, Earl Stannard M49F52
Herman, Boris S. M50
Herms, Frederick W. M48
Herre, Albert W. M26F33H47
Herrick, Anson M57
Hertenstein, Harry M48
Hertlein, Leo G. M40L41F52
Hertzmann, Walter S. M55
Herzstein, Stanley Fm56
Hicks, Miss Lucie M28L52
Hicks, Sylvanous B. Fm57
Hicok, Irving D. M53
Higbee, A. Holden M57
Higgins, Ralph V. M50
Hill, Harold A. M42
Hill, Mrs. Henry M48Fm53
Hill, The Reverend Keppel W. Fm55
Hills, Edward E. M45P51F52
Hindes, Barrett G. Fm55F57
Hindes, S. G. M20L46F57
Hinman, Allen T. M50
Hinsey, Joseph C. M31F33
Hinshaw, Merton E. M49
Hirsh, Frederick R., Jr. M48
Hirst, Miss Minerva M46
Hoberg, Ingemar E. Fm55
Hobson, Mrs. Anne G. M26L52
Hodges, Eldred B. M57
Hoeck, John H. M55
Hogan, Michael J. M52
Hohfeld, Edward P27
Hollingsworth, J. B. M50
Holmboe, Fred Fm56
Holmes, J. A. M51
Holmes, S. J. M15F18
Holt, David G. M57
Holt, Parker M. M50
Holt, Miss Vesta M44
Homer, Carl N. S52
Hood, Huston E. M51
Hooker, Miss Marian O. M48
Hooper, Frank P. M26L51
Hoover, F. O. M50
Hoover, The Honorable
Herbert C. M12L37H41
Hoover, Theodore Jesse M23F37
Hopfer, O. E. M53
Hopkins, John S. M50
Hopkins, John W. M58
Hopkins, L. A. M48
Hopping, Guy M58
Hopping, Mrs. Ralph P48
Horn, Francis H. M54
Horn, Stephen M45
Hosford, George N. M42
Hoskins, William M. F56
Hotchkiss, Miller F. M56
Hough, C. Edward Fm58
Hovanitz, William M39L46F55
Howard, Miss Anne M48

Howard, Miss Galen Kent M56
Howard, Dr. Hildegarde F56
Howard, John K. M52
Howard, Lot Duncan, Jr. M41
Howard, Robert B. M58
Howe, Henry S. M48
Howell, John Thomas L30F52
Hoyer, Fred A. M57
Hoyt, F. C. M52
Hubbard, Mrs. Anita Day M48
Hubbs, Carl L. M19F33
Huber, A. M22L47
Huber, Walter L. M46F56
Huckins, Ross L. M58
Hudson, Charles D. M44
Huggins, Miss Dorothy H. M41
Hultgren, Herbert N. M50
Hume, Mrs. J. H. S52
Hume, William M. M58
Hummel, Ray E. Fm56
Humphrey, William F. M21L46F57
Hunt, Edward L. M57
Hunter, J. S. M14L30H54
Huntington, Mrs. Clara M44
Huntoon, Richard C. Fm57
Huntzicker, Miss Grace E. M57
Hutchens, Francis C. M45P51L51
Hutcheson, R. B. M42
Hutchinson, J. S. L46
Hyde, Allan M. L48
Hyman, Milton M. M50

Imlay, Alexander R. M54
Ingersoll, Thomas C. P51
Ingles, Lloyd G. M48F56
Inglis, Stuart J. M57
Irwin, P. S. M52
Isaacs, John D. M50
Isaacs, Mrs. Lucile M55
Isenhour, Lloyd L. M48
Israelsky, Merle M19L44F55

Jackson, Ward S. M25L51
Jacobs, Alvin H. Fm55
Jacobs, Mrs. Bernice K. M53
Jacobs, Fred W. M51
Jacobsen, Eric C. M49
Jacoby, Francis H. M39Fm52
Jaggard, B. P. L48
Jagger, George E. M57
Jarrett, Norman A. M57
Jenkins, Donald A. M46
Jenkins, F. A. M41F46
Jenkins, Hubert O. M31L57F57
Jenkins, Olaf P. M25F33
Jennings, Charles W. M55
Jennings, Floyd E. M55
Jensen, D. D. F52
Jeschien, Otto A. M46
Jesena, Miss Anne P. M57
Johannes, Allan R. M57
Johns, Watson L. M52
Johnson, Arthur M48
Johnson, Mrs. Betty J. M55
Johnson, Douglas A. M58
Johnson, E. S. M50
Johnson, George W. M52L56
Johnson, James M. Fm56
Johnson, Lester B. M51
Johnson, Martin W. F52
Johnson, Dr. Myrtle E. M35F57
Johnson, Willard L. Fm58
Johnston, Andrew L. M48
Johnstone, Clifford M46
Johnstone, Herbert M38
Jones, Edward B. M48
Jones, Kenneth D. M51
Jones, Walter B. M55Fm58
Joos, Johannes L. M48Fm58
Jump, Dr. Karolina B. M42
Junior Museum of Marin M55

Kahn, Edgar M. M25L51
Kahn, Mrs. Ira L34P35
Kaiser, Lee M. L48
Kamal, Adel S. M57
Karolyi, E. Joseph M48
Kask, John L. M44F47
Kaye, James Mayfield M49
Keast, George R. P48
Keating, Ralph M24L48
Keck, David D. M27L34F55
Keeler, Nelson S. M50
Keen, Frederick P. M50
Keen, Dr. Myra M42F55
Keifer, H. H. M26
Kelley, Don Greame M47
Kelley, H. Allen M48
Kellum, Wilbur E. M48
Kelly, Mrs. G. Earle M21L46F54
Kempton, J. H. Fm58
Kendrick, Charles M30L31F56
Kendrick, Mrs. Charles L48
Kenna, Mrs. Charlotte H. M57
Kennedy, Mrs. Clyde C. M49
Kennedy, Harold A. Fm54
Kennedy, Miss Kathleen M26L51
Kenney, Frederick A. M48
Kent, Edward A., Jr. M54
Kent, Mrs. Thomas T. M41F52P56
Kent, Thomas T. P56
Kent, Mrs. William, Jr. M42
Kernan, John F. Fm57
Kerr, William J. M30F42
Kessel, Edward L. M30F51
Kessel, John F. M52

Keston, Morton J. Fm57
Kew, William S. W. M15L40F52
Keyston, George N. M29L57
Kiessling, Ed M57
Killip, Sanford M58
Kinghorn, J. R. M40F55
King, Homer P. M58
Kingston, Paul B. M57
Kinsey, Eric C. M39
Kirkpatrick, Paul F52
Kirkwood, Robert C. M48
Kittinger, Stewart M58
Kiyasu, K. M50
Klauber, L. M. M22F42
Kleinpell, Robert M. M42F52
Kleinpell, W. D. M24L51
Kline, Ben G. M50
Klussmann, Hans M50
Knapp, Philip C. M12L37
Knowland, J. R. L48
Knox, Cameron M41
Knox, Miss Lucy Randall M36
Knutsen, Miss Hylda M57
Kolar, Francis J. M48
Koshland, Mrs. D. E. P47
Koshland, Daniel E. M46F52P57
Koster, Frederick J. M44
Koster, H. W. M44
Kraft, Miss Barbara M55
Kratzer, William P. M54
Krauss, Miss Ethel C. M56
Kresge-Hooker Scientific Library, Wayne University M45
Krick, Mrs. Edwin Vernon M56
Kroeber, Alfred L. M01L06F55
Krois, Miss Mary T. M54
Krotcher, L. C. M50
Krueger, Albert P. F52
Krumm, Walter J. M58
Kruse, Lawrence A. M51
Kuhlenkamp, George L. M50

Lack, David M39F55
La France, D. Stoughton M43
Lakusta, Boris H., III M56
Lamb, Woodburn K. M52
Lamon, John Daniel, Jr. M50
Lamore, Walter N. M56
Landels, Edward D. C58
Landis, Philip F. L48
Lane, Lawrence W. M50
Lange, W. Harry M45
Lanier, Robert J. M52
Lapham, Macy M20L46
La Plant, Mrs. Helen M58
La Rivers, Ira M57
Larsen, Mrs. A. E. M56
Larson, A. Warren M56
Larson, Miss Adelien M48
Larson, Miss Esther L. M50
Lathrop, Leland S., Jr. M50
Lawrence, Ernest O. H40
Lawrence, L. B. M49
Lawrence, Miss Loretta M55
Lawson, Homer C. M48
Layman, Everett S. L52
Layman, Mary H. M35L41
Layton, Halsted P. M48
Leach, Edward R. M20L46P46
Leach, Frank A. M34
Leake, Chauncey D. M29F32
Lee, Arthur M55
Lee, Ed M48
Leech, Hugh B. P47F55
Leggett, Robert M. M20L46
Lehman, Mrs. B. H. P47S52
Lehmann, Fred C. M51
Lemke, George E. M50
Lenkurt Foundation, Inc. S57
Leonard, Norman Fm58
Leonard, Wayne L. M57
Leopold, A. Starker M47F52
LePere, O. R. M58
Lerner, Michael L40F55
Lester, O. C. M58
Letcher, B. W. M50
Lettieri, Miss Marie G. M58
Levis, Marshall Fm52
Levitin, Joseph M49
Lewis, Douglas B. M58
Lewis, Fred E. M34L37
Lewis, Rubin M. M57
Li, Min Hin M48
Liebes, Sidney M56
Lilienthal, P. N., III M56
Lilienthal, Philip N., Jr. M30L48Fm57
Lilienthal, Robert P. Fm52
Lillick, Ira S. M48
Lillis, Miss Helen C. M30L57
Lilly, Mrs. Donald R. M56
Linahan, John M. M57
Lincoln, L. H. Fm58
Lindsay, Stuart M50
Linford, James B. Fm57
Linsdale, J. M. M30F41L51
Linsley, E. Gorton M32P40F46
Linsley, Earle G. M15L39F52
Linstrum, John W. M46
Lipp, Charles S. M51
Littlejohn, Frank C. M55
Livermore, George S. P57
Livermore, H. P. M48P57
Livermore, John S. M49P57
Livermore, Mrs. Norman B. P48
Livermore, Norman B., Jr. P57

Livermore, Robert S. M48P57
Lobree, Floyd M48
Lochead, James K. M43P51
Locke, Augustus M54
Loel, Wayne M49
Lombardi, M. E. M23P41F50
London, Miss Helene M50
Long, Mrs. Roberta J. M56
Lorain, Robert J. Fm58
Lorentz, Robert M50
Losh, William J. M52
Loukashkin, Anatole S. M43F49
Low, Jess M57
Lowe, Mrs. Rosa M. Fm58
Loze, Stebler M57
Lucas, Donald B. M53Fm54
Luckel, Miss Elsie L. M56
Luckert, Walter E. M53
Lucks, Lloyd F. M53
Lund, Gage M56
Lund, Victor O. M48L51
Lyerly, Miss R. Jeannine M57
Lynch, Andrew J. L48
Lynch, Mrs. John H. L45
Lyon, Miss Carrie E. M53
Lyon, Gregory S. M38

MacCallum, Miss Jean A. M42
MacClintock, Mrs. Copeland M58
MacFarland, Mrs. Frank M. M34L41F55
MacGinitie, G. E. M31F45
Mackay, A. M. Fm57
Mackinney, Gordon M51
Mackintosh, Howard D. M56
Maihori, Alan P. M56
Mailliard, Ernest C. M21L34
Mailliard, James M48C52
Mailliard, J. W., III M48
Mailliard, Mrs. J. W., Jr. L45
Mailliard, The Honorable
William S. M48Fm52C54
Maisler, Sol Fm53
Maker, Frank L. M50
Maley, Richard P. M57
Malkin, Borys M48
Malloch, Walter Scott M50
Malville, N. J. M58
Manitsas, George A. M58
Mann, Jerome M56
Mans, Miss Marie L. M55
Marian, Joe E. M58
Marple, Charles D. M50
Marquardt, Mrs. Marian Fm53
Marston, Otis M46
Martenstein, T. A. M57
Martin, Mrs. Joseph, Jr. L48
Martin, Robert C. M49
Martin, Walter Scott M58
Mason, H. L. M25F45
Matlock, David W. C57
Matthew, Norman W. Fm55
Matthias, Russell M53
Mawby, Lionel S. M50
May, John C. M48
Mayer, Charles M54

McAllister, Decker G. M50F52P57
McAllister, Mrs. M. Hall L50
McAllister, Oscar O. T. M50
McAllister, Otis M19L46
McBean, Atholl M12L37P47
McBride, Rexford M53
McCall, Herbert C. M58
McCandless, James C. Fm53
McCarthy, Francis Joseph L57
McClintock, Dr. Elizabeth M51F57
McClure, H. Elliott M52
McCrory, L. J. M58
McCulloch, Riley G. M54
McDowell, James A. M50
McElligott, Mrs. Ella M56
McElvare, Rowland R. M50
McEwan, Miss Jean M53
McEwen, George F. M21F26
McFadden, Miss Effie B. M21L46
McGuinness, Joseph S. M50
McGuire, Ignatius M15L45
McHenry, Donald E. M54
McKaye, Andrew Fm58
McKee, Mrs. Marie E. M55
McKenzie, Mrs. John C. M44Fm54
McKibben, J. Warren M58
McKinley, F. M. C54
McKinley, L. M. M57
McLaren, Donald A. M45
McLaughlin, Mrs. Alfred M44
McLaughlin, Donald H. F52
McLaughlin, Donald T. M51
McLean, Donald D. M30L56
McLeod, Kenneth, Jr. M57
McMahon, Mrs. Clarissa S. M58
McMahon, Jon M58
McMillan, Eben M49
McMillan, W. Bruce M26L51
McMinn, H. E. M45F51
McMurphy, James J. W. M20F35
McNabb, Fred C. M40
McNear, F. W., Jr. L39
McSweeney, John M55
Medina, Mrs. Edward J. M50Fm52
Medsger, Gerald W. M48
Meehan, Miss Mary W. M51
Meeks, George A. M54
Mei, The Reverend Alexis I. F52
Meier, Miss Sophie S. M56
Mein, William Wallace, Jr. M48

Melander, A. L. M48
Melanson, Frank M58
Melin, Manuel J. Fm57
Melvin, William L. M58
Menken, F. A. M39
Menzel, George W. Fm56
Menzies, Robert H. M12L37
Mercer, Miss Barbara M55
Merner, Garfield D. M50
Merriam, Charles W. F55
Merriam, Lawrence C. M38F55
Merritt, Norman A. M57
Meyer, Alfred F. S52C58
Meyer, Miss Catherine H. M56
Meyer, Miss Estelle M55
Meyer, Mrs. Grace E. M47
Meyer, Karl F. M27F29
Meyer, Roland L48
Meyer, Theodore R. Fm57
Meyer, Wilson C55
Meyers, Thomas J. M48
Michelbacher, A. E. M42F52L52
Michels, Leon M. M50
Middlekauff, Woodrow W. M51F56
Milford, G. R. M42
Millard, Oliver J. M50
Miller, Alden H. M35F41
Miller, Miss Jessie E. M48Fm52
Miller, Loye H. M52F56
Miller, Richard A. M56
Miller, Richard G. M44
Miller, Robert Cunningham M23F38L51
Miller, Robert W. L48
Miller, Miss Verdi M57
Mills, H. F. M30L56
Miner, Alan Fm57
Moffitt, Herbert C., Jr. L45
Monteagle, Kenneth M20L46
Monteagle, Paige M20L46
Montgomery, George G. L45
Montgomery, Mr. and Mrs. Harry V. Fm53
Moody Institute of Science M48
Moore, A. R. M42F57
Moore, Edwin S. M57
Moore, James R. Fm51
Moore, Larry C. M55
Moore, W. Harvey M58
Morris, Austin M53
Morris, John V. M51
Morris, Lawrence K. M48
Morrison, C. G. Fm52
Morrison, S. H. M50
Morse, Stanley W. M48
Moss, Malcolm W. M50
Mott, Chester J., Jr. Fm55
Mottram, William E. M52
Mountford, G. E. M41
Moyer, Richard Fm56
Muldner, Max A. Fm57
Muller, John P. Fm58
Muller, Siemon William M42F47
Mulryan, Henry M50
Munger, Milton P., Jr. Fm58
Munich, William M44
Munz, Philip A. M25L34F44
Murie, Olaus J. M50
Murphy, Robert Cushman H47
Myers, George S. M29F33

Naffziger, Howard C. M30L56
Narfi, G. F. M52
Nash, Edmund W. M58
National Geographic Society M53
Neal, Newell W. M57
Needham, Paul R. M49F51
Neff, Mitchell M49
Neff, Richard S. M50
Neil, Mrs. Edith H. M53
Nelson, Arthur H. M54
Nelson, John B. Fm53
Nelson, Mrs. Roy F. M56
Nelson, Sherman M57
Neppert, Miss Julia M. M50Fm52
Nesche, George E. M50
Ness, Vincent Thery M50
Neuenberg, Andrew E. M54
Newcombe, Curtis L. M50
Newhall, E. W., Jr. M48
Newhouse, Robert M. M50
Nichols, H. F. Fm53
Nichols, Henry D. L48
Nichols, Miss Hillaryanne Fm57
Nickelsburg, Mrs. M. S. M35
Niebauer, John J. M50
Noble, Earl M47
Noerager, A. J. M51
Norberg, Mrs. W. P. M55
Novick, Gabriel M56

Oakes, Roscoe L47
Oakeshott, Gordon B. M56
Oakley, Mrs. Olive Burwell M49
Oberlander, George T. M56
Obitz, M. R. M29L49
O'Brien, C. E. M50
Ochsner, Mrs. W. H. M37
O'Connell, Daniel J. M58
O'Connor, Hugh M43
Oczkewecz, Mrs. Agnes M50Fm54
Older, Benjamin M20L46
Older, Mrs. Benjamin J. M48
Older, John A. M50
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Olsen, Sidney M50

Olsen, William J. M57
O'Neill, Mrs. E. D. M46Fm52
Ornstein, Walter M48
Orr, James A. M54
Orr, Robert T. M34L40F44
Oryall, Floyd A., Jr. M58
Osborn, Mrs. John Fm56
Osell, L. N. M50
Ostrom, Mrs. Charles D. Y. M50
Ostrom, Charles D. Y. M51
O'Sullivan, Curtis H. M56L57
Outler, Finn W. M50
Owen, Kenneth E. M57

Pace, Nello M50
Packard, Earl L. M41F45
Packmohr, Carl M48
Page, Charles M42F52P57
Page, Charles Hall M48
Page, Charles R. F52
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Palmer, Mrs. S. H. M49
Pantages, John M50
Papenfuss, George F. F52
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Parker, Robert B. Fm57
Parkinson, Roy H. M34L38
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Parsons, The Right Reverend
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Pearce, Owen M55
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Peattie, Donald C. M42
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Pedemont, Leo R. M56
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Pedersen, Miss Thea M58
Peers, Richard M28L29
Peers, Miss Susie M. M19L39
Pellegrini, Tullio M51
Peltzer, Albert M57
Pemberton, J. R. M19L45F55
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Perez, Eugene Reyes M50
Peters, Harry Fm57
Petersen Engineering Company M55
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Peterson, Conrad L. M56
Peterson, G. Baltzer Fm56C56
Peterson, F. Somers P47
Peterson, Mrs. F. Somers M51S52
Petray, Henry C. M56
Petrilli, Alexander M50
Pettis, William M. M48
Pfaffenberger, Clarence J. Fm57
Phillips, Richard L. M57
Phillips, Vance M30L56
Philpott, William M57
Phister, Montgomery L48
Phleger, Herman L45
Phleger, Mrs. Herman L45
Pickard, Miss Edith A. M30L56
Pickard, Rawson J. M50
Piggott, H. B. M36
Pigott, John T. M50
Pilsbry, Henry A. H32
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Plant, David M56
Platt, Robert A. M58
Plumb, James L. M55
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Pollard, Henry M. M45
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Potter, Dr. Alice M50
Potvin, T. M50
Poulsen, Theodore S. M50
Power, Robert H. M49
Prashad, Baini H32
Pratt, Robert Y. M49
Pratt, Roy A. M51
Pratt, William H. M48
Pregel, Boris M54
Preston, John C. M38
Price Waterhouse & Company S52
Pringle, Cornelia C. M38

Quinlan, Dr. Catherine M. M50

Radcliffe, D. H. M49
Raffetto, Joseph J. M49
Rakowicz, Maurice M53
Ralston, Alfred E. Fm53
Ralston, Miss Beatrice M50
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Randall, Ellis R. M57
Rands, Roderick E. M48Fm52
Rasor, Dr. Claire M50
Rausch, Robert M57
Raven, Peter H. M56
Raven, Ronald J. M58
Read, J. Marion M44
Read, Miss Matie H. M49
Reese, William M., Jr. M56
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Reichert, Irving F., Jr. M57
Reinelt, Mrs. Frank M49
Reinke, Frank M57
Reiter, Victor, Jr. M38
Revelle, Roger F52
Reynolds, T. Eric M41
Reynolds, Lewis B. M50
Rhine, Miss Esther M47
Rice, Jonathan C. M53
Rice, Louis N. M50
Rice, Salem J. M52
Rich, Neville J. M57
Rich, Willis H. M15L40F55
Richards, Dexter N. L47
Richardson, Mrs. Ethel E. M48
Riddervold, Gordon A. M56
Riess, Stephan S58
Rigden, D. L. M48
Rigg, George B. M44F52
Ripley, H. Dwight L47
Rixford, Emmet L. M26L52
Roberts, E. V. M55
Robertson, Empey A. M46
Robinson, Harvey E. M48Fm54
Robinson, Mrs. Stewart J. M50
Rocklitz, Harold Fm57
Rogers, Fletcher M55
Roland, Ernest J. M57
Roldan, Ernesto M52
Rolph, Ronald T. M13P34
Rose, Lewis S. M22L32F52
Rose, Robert M53
Ross, Miss Dorothy D. M57
Ross, Edward S. M40F52
Ross, Harry D. M43
Rossi, Stephen J. Fm53
Roth, W. P. P48
Roth, William P. M48
Rowe, Charles A. C57
Rowley, J. Stuart M31L32
Rugg, Stuart A. M48
Rumpp, Norman L. M51
Runner, James B. M50
Russell, A. S. M41
Russell, Mrs. Henry P. M42L45F52
Rustigian, George A. M56
Ryan, Vincent G. M50
Ryerson, Knowles A. M48

Sacramento State College Library M49
Sah, Peter Pen-Tieh M50
Salisbury, Mrs. John W. M57
Sailer, Eldor C. M50
Salanave, Leon M51
Salmon, Dr. Edith M55
Salz, Ansley K. L48
Sampson, Walter B. M48
Sanders, Audley O. M42
Sanders, C. N. M55
Sandkulla, William Fm58
Sanford, T. D. M48
San Francisco Garden Club M43
San Francisco State College M52
Sang, Henry J. C57
Santina, Henry M57
Sarah Dix Hamlin School M48
Sargeant, Edwin L. M55
Sather, Carlyle Fm51
Saunders, William W. M50
Sawyer, E. W. M56
Sawyer, Miss Luella K. M54
Saxby, Donald T. M48
Saxby, John G. M52
Saylor, Lawrence W. M46
Scafire, Miss Leona R. M52
Scarf, Donald E. Fm57
Schaefer, Mrs. Elmer R M48
Schaefer, Karl M55
Schaffer, Arthur M. Fm57
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Schaupp, John B. M50
Schaupp, Karl L. M37
Schell, Miss Margaret W. M48
Schenck, Hubert G. M42F57
Scherer, Mrs. Paul A. M38
Schiff, Leonard F52
Schlesch, Hans H32
Schlichtmann, Albert O. M52
Schlichtmann, Carl E. M52
Schmidt, M. H. M57
Schmidt, Robert Gober L46
Schmidt, Roger A. Fm53
Schmidt, Mrs. Willard E. M50
Schmiedell, Edward G. L45
Schmiedell, Mrs. Edward G. M41L45
Schmitt, L. S. M49
Schonewald, Hans Fm58
Schultz, John E. M56
Schulze, Paul T. M48
Schwabacher, James H. M20L46
Scofield, Norman B. M15L40F55
Scott, Mrs. Dorothy Dean M42
Scott, George M. M48
Scott, Henry O. Fm57
Scripps, Sam M55Fm56
Scullen, Herman A. M49
Seale, Alvin M21L34P40F55
Searight, G. Dale M57
Sears, David R. M50
Sechler, E. E. M51
Sefton, J. W., Jr. M51
Sesnon, Porter S52
Sewell, Thomas C. M55
Sexton, Miss Veronica J. M31F52
Shafer, George D. M36F45

Shane, C. D. M53F57
Shapiro, Phillip Fm58
Shapovalov, Michael M48
Shattuck, William L. Fm54
Shaw, Mrs. Joan M43
Shaw, Joseph M53
Shaw, T. H. M25F33
Shawl, Louis M56
Sheehan, Mrs. Jessie W. M51
Shelberg, Mrs. Wesley Elmer M56
Sheldon, Donald F. M56
Shepard, J. P. Fm57
Sherman, Allen B. M49
Sherman, F. Barreda M52
Shermund, Ralph C. Fm54
Sherwood, Frederick Fm57
Shine, A. T. M48
Shively, J. Paul M50
Shockley, George F. M48
Show, Stuart Bevier M26F46
Shrafel, Miss Audrey E. M53
Shragge, Harmon M. M55
Shubin, Nicholas Fm57
Shuman, Mrs. J. F. M58
Shumate, Albert M44
Sherman, George F. M51
Sibley, Charles G. F52
Siebenthal, B. J. M56
Silberstein, Miss Edith M48
Silge, Martin M46
Silvani, Mrs. Henry L. M53
Silverstein, Bernard M47
Simmonds, Dr. Nina M42
Simmonds, Raymond J. M48
Simon, Edwin J. M51
Simonds, Ray M57
Simons, Edward C56
Sischo, Miss Joan M55
Sisson, Merrell A. M55
Sister Mary Benedict M58
Sizemore, Ted M56
Slack, Miss Edith M46
Sloss, Mrs. Louis L48
Slusser, Willis S. M58
Smith, Allyn G. M38L43F52
Smith, Budd J. M48
Smith, Miss Emily D. M48
Smith, F. LaVerne M48
Smith, Gregory M50
Smith, Mrs. Otis H. M48
Smith, R. A. M53
Smith, Ralph A. M44
Smith, Ralph I. F52
Smith, Thomas B. M51
Smith, W. M. M48
Smyth, Francis Scott M50
Soderstrom, E. M. M50
Sofio, Mrs. Robert M54
Sonnenschein, Mrs. Lillian M57
Sosso, Homer H. M57
Sovereign, H. E. M40
Sowls, Lyle M57
Spaulding, Charles H. Fm54
Spier, Leslie F55
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Spreckels, Rudolph M13L38
Sproul, Dr. Dorothy G. Fm55
Sproul, Robert G. M26L44
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Spurlin, S. Vaughn M56
Standeford, Charlton G. M50
Stanford University Library M50
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Staples, Dr. Mary M. L48
Stapleton, Leo J. Fm57
Stapp, Edward M. M53
Stapp, Mrs. Lillian R. M51
Starr, Albert C. M57
Starr, Walter A. M50
Stebbins, C. Rowland M49
Stebbins, G. Ledyard, Jr. F56
Steele, Earle Fm56
Steere, William C. F52
Steinberg, Miss Joan M51
Steinemann, William H. M53
Steinhart, Jesse H. L48
Steinhaus, Edward A. M56
Steiny, Homer M31L57
Steller, L. P. M50
Stellner, W. H. Fm55
Stephens, Bruce M. M48
Stephens, William Barclay M19P46F521'56
Stephens, William W. M54
Stern, Curt F52
Stern, Ralph J. A. M49
Stewart, H. P. M51F56
Stewart, Paul B. M57
Stewart, W. E. M49
Stillman, Mrs. George D. M57
Stimmel, George L56F57
Stirton, Ruben A. F52
Stock, Alden L. M54
Stocker, Leslie W. M51
Stoll, Paul James M51
Stollberg, Robert M53
Stolz, Ernst M58
Stone, Philip M. M49
Stone, Mrs. Robert S. M50Fm54
Storer, Tracy I. M15F33
Stous, Dr. Anna Catherine M55
Stoye, Frederick H. M48
Strain, Jerome C. M50
Strattan, George W. M57
Stratton, J. M. M50

Straub, George F. M51
Strauss, Jack S. M56
Struble, Homer P. Fm54
Struve, Otto F56
Studebaker, O. D. M58
Sumner, Lowell M50
Sutherland, Mrs. Violette C. M50
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Swain, Robert Eckles M35F39
Swanson, Miss Edith M56
Swendsen, Mrs. Lucile Evans M57
Swett, W. F. M48
Swig, Benjamin W. L48
Swingle, Leonhardt M52
Swortfiguer, George B. M53
Sykes, W. M55
Symmes, Whitman, Jr. M58

Taber, Loren B. M45
Taber, Robin E. Fm56
Tabor, Richard D. M57
Talmadge, Robert R. M50
Tamalelagi, Prince Tuala M49
Tanner, O. R. M50Fm52
Tanner, Ronald A. Fm57
Tanner, Vasco M. M54
Tarp, Fred H. M57
Tashjian, John M51L55
Tatosian, Mrs. Lucy M55
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Taylor, Mrs. Clotilde Grunsky M28L36
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Taylor, Lewis W. M42
Taylor, P. E. M53
Taylor, Walter P. M12F35
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Terry, Mrs. Mabel M57
Terry, Robert M50F57
Thamm, Alphonsus F., Jr. M43Fm53
Thayer, Mrs. Raymond H. Fm55
Thelen, Max L48
Thomas, Crawford M55
Thomas, Harold E. M48
Thomas, Sydney F. M48
Thompson, James H. M50
Thompson, Joseph S. M49S52
Thompson, Thomas G. M41F52
Thompson, Will F. M22F33
Thompson, William L. M50
Thomson, Arthur C. M55
Thorpe, Spencer R., Jr. M57
Thrane, F. W., Jr. M57
Tilden, Charles L., Jr. P54
Tilden, J. W. M48
Timoshenko, Stephen M42F44
Tobin, John E., Jr. Fm58
Todd, Frank E. M48
Todd, Frank N. Fm54
Todorovic, D. D. M50
Todsen, Paul J. M42
Tompkins, P. W. M30L55P57
Torres, Miss Heloisa Alberto H46
Tortonese, Enrico H51
Tose, Cecil M50F52
Towne, G. S. M48
Townsend, Mrs. Charles T. M48
Tracy, Harry W. M43
Trader Vic S52
Trahern, Miss Mary A. M58
Trask, Parker D. M48F56
Traut, Herbert F. M50
Travis, James C. Fm57
Treadway, Donald G. M56
Trost, Henry M18L44F54
Troxell, Harold C. M48
True, Gordon H., Jr. M31L57
Tudhope, George V. M54
Tullus, David S. M57
Turner, Francis J. F52
Turpen, William E. M55
Tusler, F. A. M55
Tuttle, Charles W. L45
Tuttle, Robert S. M58
Twining, Howard M56
Twisselmann, Ernest M55
Twombly, Miss Margaret M. Fm56
Tyler, Percy D. M54

Uhl, Don M48
Underhill, Eliot L42
University of California Library,
Riverside M56
Urbahns, Theodore D. M48
Usinger, Robert Leslie M37F51
Utterback, C. L. M41F51

Van Camp, G. C. M49
van Deinse, F. C. L48
Vanderbilt, George M51P52
Vandevere, Judson Eells M49
Van Fleet, Stephen M57
Van Hagen, Miss Winifred M50
van Niel, C. B. M42F46
Van Pelt, William H. M51
Varian, Russell F52
Vaughan, William E. Fm56
Verdelin, Henry Fm52
Ver Planck, William E. Fm55
Vesper, Howard F56
Videen, Clayton A. M51
Vogel, Fred A., Jr. M50
Volkay, Joseph M57
Volkmann, D. G. P48
Volkmann, Miss Johanna P48
Vollmer, Albert M. M34L58
von Frankenberg, Bernard M57

von Gehren, E. P. M. M58
von Geldern, Charles E. M11F29
von Geldern, Hans M20L46
Vreeland, Frederick K. M46

Wadleigh, Leonard Fm57
Wagener, Willis W. M48
Wahlund, Carl B. M49
Walker, Brooks M56
Walkup, Ward G. P48
Wallace, Herbert S. M50
Wallace, Robert E. M55
Walraven, Harry M51
Walther, Eric M20L30F55
Wapple, Robert J. M56
Ward, Handley M58
Warnecke, Mrs. John C. M56
Warren, The Chief Justice Earl R. M50
Washburn, Bradford M41F55
Watkins, H. George M51
Watkins, Stanley M50
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Watts, Malcolm S. M. M50
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Weaver, Charles E. M15F38H51
Webber, C. H. M53
Webber, Charles S. M46
Webster, D. L. M21F29
Webster, Hugh B. M50
Webster, J. Dan M49F57
Weihe, Ernest E. M51
Weil, S. N. M50
Weill, Michel D. M49
Weitzman, Stanley H. M48
Welles, S. P. M42F57
Wellhouser, Harry N. M53
Wells, William S., Jr. M50
Weniger, H. M50
Wenner, Mrs. Sim Fm57
Weseman, Chester M. M50
West, Lynn F. M56
West, Norman R. M56
Westfall, Frank P. Fm56
Weston, E. Roy M48
Weston, John U. M52
Westphaelinger, Miss Caroline M50
Wetmore, Alexander M31F44H46
Weymouth, Frank W. M14F29
Wheeler, Coleman, Jr. C53
Wheelon, Homer M48
Wheeting, Lawrence C. M50
Whilton, Miss Ynez Yna M38
Whitaker, Douglas M. F52
Whitcraft, Thomas E. M39
White, Dr. Elizabeth B. M48
White, George B. Fm58
White, Harvey F56
White, John R. M21L47
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White, Mrs. Margaret R. Fm55
Whitehead, Charles N. Fm54
Wholey, William N. M17L42
Wickson, Miss G. C. M49
Wiggins, Ira L. M44F47
Wight, Mrs. Georgeanna L. C58
Wigle, D. C. M53
Wilbert, Mrs. Irene M49
Wilbur, Brayton M43P47F52
Wilbur, Dwight L. M41
Wilbur, Jordan R. M57
Wilbur, Paul C. M42
Wilcox, George E., Jr. M50
Wilhelm, Albert G. Fm54
Wilimovsky, Norman L. M57
Willett, Mrs. George L50
Willett, Mrs. Walter M. M33P33
Williams, A. D. Fm52
Williams, F. X. L18F52H54
Williams, George W., III M57
Williams, Howel M37F44
Williams, M. Woodbridge M56
Williams, Robert E. M55
Williamson, Miss Amy M36
Willis, Mrs. C. G. M58
Wilson, Albert M43
Wilson, Everardus B. M48
Wilson, Mr. and Mrs. G. O. M52C53
Wilson, Paul T. M41
Winston, William B. M56
Winternitz, Carl Fm57
Wiper, Thomas M50
Witter, Dean M45F52P52
Witter, Jean L48
Wohlschlag, Donald E. M56
Wolff, Frederick S. M54
Wolff, John L. M39
Wood, David A. M50Fm52
Woodford, A. O. M18F35
Woodruff, C. B. M20L46
Woodruff, Miss Regina M48
Woodward, Mrs. Lenore B. M55
Woodward, W. T. M48
Woodworth, Harvey B. M58
Woon, West Fm57
Workman, Mrs. Florence M53
Wormser, Mrs. Paul M54
Worsfold, George M58
Wurlitzer, Raimund B. M52
Wyche, Philip L. M54
Wyckoff, Stephen N. M54
Wyman, Thomas S. M55

Yabe, H. H32
Yeager, Lee M57
Yonge, C. M. M41H48
York, Frank C. Fm57
Yoshino, Fred H. M56
Young, T. N. Fm55
Youngberg, J. C. M51

Zagory, Conrad Fm56
Zakostelny, Josef L56
Zellerbach, H. L. M42L48
Zellerbach, J. D. M30L47
Zellerbach, Mrs. Jennie B. P48
Zender, Robert A. Fm58
Ziliotto, Felix M54
Zimmerman, Elwood C. M54
Zimmerman, Harold M26L52
Zimmerman, Miss Jane M46
Zischke, Herman A. M53
Zook, Edgar T. M42Fm52
Zoological Society of San Diego M54

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